



South Dublin County Council

VOLUME A

Works Requirements

Energy Retrofit Programme: specification for bungalow and two- storey terrace properties

Document Revision Control Sheet

Date	Rev	Revision	Author
11/11/2024	1	Draft	C'OC
03/07/2025	2	Current	C'OC
11/08/2025	3	Current	A McM
20/02/2026	16	Current	CO'C
08/04/26	17	Current	CO'C

Table of Contents

1.0	General Overview	9
1.1	Introduction.....	9
1.2	Specification and ancillary documentation	9
1.3	Specification and ancillary documentation	10
1.4	Energy efficiency retrofit programme	11
1.5	Site locations.....	11
1.6	Visting the site	11
1.7	Access to the dwelling	11
1.8	Regulations, standards and codes of practice	11
1.9	Duties, taxes and value added Tax.....	13
1.10	Tax clearance status	13
1.11	Insurances.....	13
1.12	Payments and retention.....	13
1.13	Liability and defects period.....	13
1.14	Safety, health and welfare	14
1.15	Child safeguarding	14
1.16	Temporary measures during contractor activities	15
1.17	Working hours.....	15
1.18	Control of noise and pollution	16
1.19	Working with Asbestos containing materials	16
1.20	Site protection and housekeeping	16
1.21	Waste management	17
1.22	Equipment and materials	17
1.23	Competency of trades, quality and workmanship	18
1.24	Evidence of enclosed Works	19
1.25	Builders work and fixings to the structure	19
1.26	Electrical works	20
1.27	Order of works	20
1.28	Testing, commissioning and setting to work.....	20
1.29	Labelling and diagrams	21

1.30	Changes to the works (variations).....	21
1.31	Project meetings	22
1.32	Training to tenants on operation	22
1.33	Handover files	22
2.0	Specification and works requirements.....	25
2.1	Attic Works	26
2.1.1	Clearing of attic	26
2.1.2	Supply of skip.....	26
2.1.3	Removal of flooring within attic space	27
2.1.4	Supply and installation of raised storage platform	27
2.1.5	Supply of install raised walkway	27
2.1.6	Supply & install draught stripping to attic hatch	28
2.1.7	Supply & installation insulation to attic hatch.....	28
2.1.8	Supply & installation of roof vent tile.....	28
2.1.9	Supply & installation of ceiling level attic/roof insulation	28
2.2	External Walls.....	29
2.2.1	Extraction of cavity wall insulation	29
2.2.2	Cavity pumped EPS bead insulation	29
2.2.3	External wall insulation.....	30
2.2.4	Working around exiting services	32
2.2.5	Timber Grounds.....	32
2.2.6	Fascia soffit, gutters and downpipes.....	33
2.2.7	External wall vent cover	33
2.2.8	Extending waste pipes	33
2.3	Windows and Doors	33
2.3.1	Temporary removal & reinstall of window coverings	33
2.3.2	Temporary removal & reinstall of inertia sensors and magnetic contacts	34
2.3.3	General windows & doors overview & specification	34
2.3.4	Detailed uPVC window specifications	36
2.3.5	Detailed uPVC Window specification	39
2.3.6	Detailed uPVC French double door specification.....	41
2.3.7	Detailed uPVC composite door specification	43

2.3.8	Detailed uPVC single leaf door specification	45
2.4	The Central heating system.....	46
2.4.1	Pressure test of existing heating pipework	49
2.4.2	Re-pipe of heating pipework	50
2.4.3	Re-pipe of heating pipework to downstairs/extension	50
2.4.4	Removal of existing boiler and heating controls.....	50
2.4.5	Removal of existing cylinder and redundant pipework	50
2.4.6	Power flush of retained heating pipework	51
2.4.7	Adaptions of retained heating pipework	51
2.4.8	Central heating system components & design parameters	51
2.4.9	Air to water monobloc heat pump technical requirements	56
2.4.10	Indirect hot water storage cylinder technical requirements	58
2.4.11	Anti-freeze protection	59
2.4.12	Valves and stopcocks.....	59
2.4.13	Sealed system and expansion vessel.....	59
2.4.14	Safety valve	60
2.4.15	Automatic bypass	60
2.4.16	Magnetic filtration Unit	60
2.4.17	Air vents.....	60
2.4.18	Electric energy meter.....	61
2.4.19	Labelling and identification.....	62
2.4.20	Immersion switch anti tamper cover / guard	62
2.4.21	Heat emitters - radiators	62
2.4.22	Wall mounted central programmer	64
2.4.23	Wall mounted room stat.....	64
2.4.24	Heat pump cage.....	64
2.4.25	Condensate soakaway	65
2.4.26	Lagging of existing cold water storage tank and pipework	65
2.4.27	Replace cold water storage tank & tank stand.....	65
2.4.28	Lagging of existing cold water storage tank & pipework.....	66
2.4.29	Installation of new heating system.....	66
2.4.30	Tenant training on operation	68

2.5	Ventilation works	68
2.5.1	Wall core, sleeve & vent covers	68
2.5.2	Supply and fit baffled controllable background wall vent kit with an external vent cowl ..	69
2.5.3	Supply and fit adjustable vent	70
2.5.4	Supply and fit external wall vent/louvre	70
2.5.5	Filterless centrifugal extract fan	70
2.5.6	Decentralised mechanical extract ventilation (dMEV) fan	71
2.5.7	Centralised Demand Control Ventilation (DCV)	72
2.5.8	Supply and fit Kitchen extract hood.....	73
2.6	Electrical works	73
2.6.1	Upgrade of consumer unit (existing height), meter tails & main earth	74
2.6.2	Upgrade consumer unit (regulation height), meter tails & main earth	75
2.6.3	Supply and install consumer unit (existing height)	75
2.6.4	Supply and install consumer unit (regulation height)	75
2.6.5	Supply and install sub consumer unit.....	76
2.6.6	Supply and install meter tails	76
2.6.7	Supply and install 63amp fuse in IP rated enclosure.....	76
2.6.8	Supply and install main earthing cable, electrode & electrode box	77
2.6.9	Supply and install surge protection and AC type RCD's/ELCB's.....	77
2.6.10	Hourly rate for electrician.....	77
2.7	Airtightness works	77
2.7.1	Sealing penetrations to external building envelope	77
2.7.2	Sealing around internal soil vent pipe	78
2.7.3	Sealing penetrations to ceilings	78
2.7.4	Sealing of fireplace	79
2.7.5	C-cap to chimney	79
2.8	Miscellaneous works	79
2.8.1	Porch soffit insulation works	79
2.8.2	Supply and install ESB meter box	80
2.8.3	Supply and install shelving to boiler press	80
2.8.4	Boiler wall painting	80
2.8.5	General internal painting.....	80

2.8.6	General internal plastering repairs	80
2.8.7	Supply and install laminate flooring.....	80
2.8.8	Timber box-in	81
2.8.9	Alteration to hotpress	81
2.8.10	Alteration to Attic Hatch.....	81
2.8.11	Construct attic hatch.....	81
2.8.12	Reslab ceiling	81
2.8.13	Supply and install downlight covers.....	82
2.8.14	General external painting	82
2.8.15	Construct concrete footpath	82
2.8.16	Saw cut masonry concrete wall.....	82
2.8.17	Demolition masonry concrete wall	83
2.8.18	Construction of concrete pier	83
2.8.19	Take down and reinstall timber side gate.....	83
2.8.20	Supply and install timber side gate	83
2.8.21	Supply and install shower pump	83
2.8.22	Air quality monitoring & sampling.....	84
2.8.23	Asbestos Removal & re-occupation certification.....	84
3.0	Appendices	86
3.1	Appendix A -Tender Submittals	87
3.2	Appendix B - SDCC Mechanical Specification for Energy Retrofit	93
3.3	Appendix C - SDCC Electrical Specification for Energy Retrofit	112

1.0 General Overview

1.1 Introduction

This document sets out the works requirements and specifications for all works related to this contract. South Dublin County Council (hereinafter referred to as “SDCC”) intend to carry out energy retrofit upgrades to its housing stock. The intended works relevant to this contract will be as per the pricing document with the works requirements and specifications detailed within this document. The tender should note that not all works within the pricing document & specification may not be carried out. The Contractor is to comply in all elements to this tender specification. The works may be required to be completed in occupied dwellings and the contractor should factor associated costs with ensuring dust and noise are kept to a minimum. The necessary safety precautions need to be adhered by which can be reviewed under the preliminary health and safety plan. Where necessary and appropriate, particular requirements in this specification will be developed further and augmented in this specification.

This tender will consist of:

Volume A

- Works Requirements

Volume B

- Form of tender and schedule

Volume C

- Pricing Document

Volume D

- Contract Documents and Model Forms

Additional Info

- Health and Safety
- ITT
- Quality Documents and Criteria
- Suitability Assessment Questionnaire

1.2 Specification and ancillary documentation

The Contractor must read this specification in its entirety, together with all other referenced ancillary documentation and instructions of the client. The Contractor must be fully acquainted with the general and specific requirements contained in all documentation relating to this particular project for the works.

This specification and particulars should be read in its entirety and in conjunction with

all drawings, other contract documents and relevant Building Regulations.

1.3 Specification and ancillary documentation

The contractor is to provide a staff structure at pre contract meeting to demonstrate the staff they will dedicate to the contract and how they intend to utilise the resources to deliver the contract with a timeline. The minimum staffing requirements and qualifications must be committed for the duration of this project.

Profession	Minimum Quantity	Experience
project manager	1	Minimum 5 years' experience in residential construction/retrofitting
site manager	1	Minimum 2 years' experience in residential construction/retrofitting
finishing foreman	1	Minimum 2 years' experience in residential construction/retrofitting
Plumbing Contractor	6	minimum six plumbers with two of which to be certified in heat pump installation & trained by the manufacturer of the contractors chosen heat pump brand
Electrical contractor	two registered electricians	Minimum of two Registered electricians (REC) with experience in heat pump installations of benefit
Window & Door Contractor	- one senior installer - three operatives	Senior installer to have 5+ years installation experience

cavity wall insulation Contractor	At discretion of Main contractor	NA
SEAI approved roof insulation contractor	At discretion of Main contractor	NA
Chimney Contractor	At discretion of Main contractor	NA

1.4 Energy efficiency retrofit programme

This project is for the retrofit of domestic dwellings. Dwellings may comprise of various types such as apartments, semi-D and or terrace houses. Works may comprise of upgrade to the existing heating system and building fabric. Refer to pricing document for further information on works. Note not all properties included in this tender may not proceed.

1.5 Site locations

The location of the site of works are as listed in master schedule.

1.6 Visting the site

The Contractor is advised to visit the site to establish the exact scope of work, unless specifically listed by SDCC, means of access and working space, facilities for delivery and storage of materials which could in any way influence the works. In addition, the Contractor will be deemed to have made a thorough examination of the specification and all documentation provided in order to complete the works, as instructed.

1.7 Access to the dwelling

The Contractor must consult with the respective tenants and via SDCC staff with regard to the access to each site. This will include suitable times for making deliveries, parking of vehicles and all other matters that may affect them. All arrangements must be agreed with each tenant prior to the commencement of any works; each site will be specific.

No photographs shall be taken which contain any tenants visible in same or any picture frames on shelves etc. with photos of tenants / people displayed.

The Contractor must take all protective measures to ensure that no damage is caused to any parts of the structure or fixtures during the removal of existing equipment, delivery of materials, installation of new equipment including the removal and disposal of rubbish. The Contractor must make good any damage caused

1.8 Regulations, standards and codes of practice

The Contractor must carry out all installation works in accordance with applicable and current editions of all relevant Irish, European and British Standards in addition to the standards listed and mentioned throughout this specification. The regulations and

requirements of all local authorities having jurisdiction must also be complied with fully. The Contractor must also ensure compliance with all relevant Statutory Instruments (SI), current relevant standards and that all equipment and materials incorporated into the various systems must bear the CE mark in the form stipulated in the European Pressure Equipment Directive 97/23/EC.

Shall a specific discrepancy exist between the requirements of two or more documents listed below then the contractor shall seek and obtain written confirmation from SDCC on how to proceed, failure to obtain same will result in a contractor rectifying to SDCC satisfaction at no additional cost.

The Contractor must ensure that all works undertaken on this project fully comply with the current Building Regulations and Technical Guidance Documents, including the following:

- Irish, European or British Standards.
- The Building Regulations & Technical Guidance Documents.
- Irish Building Regulations Part L 2019 & SEAI Compliance Guide For Part L & F
- Building Regulations Technical Guidance Document D Materials and Workmanship
- Technical Standards as noted in the various clauses of this specification.
- Relevant Publications of the Chartered Institution of Building Services Engineers (CIBSE).
- Relevant Publications of the Irish Environmental Protection Agency (EPA).
- The Safety, Health and Welfare at Work Act, 2005.
- Safety, Health and Welfare at Work Act (General Applications) Regulations 2007.
- Safety, health and welfare at work (construction) regulations 2013
- Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2025
- 2025 Code of Practice for the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations, 2006-2025
- European Energy Related Products “ErP” Requirements
- BS EN 15450
- EN 378
- NSAI SR54
- NSAI SR50
- Register of Gas Installers Ireland.
- IS 813 - Domestic Gas Installations.
- Gas Networks Ireland.
- European Commission Employment, social affairs and inclusion - Guidelines for managing asbestos related health and safety risks at work
- The Safety, Health and Welfare at Work (Carcinogens) Regulations 2024
- The requirements of the European Pressure Equipment Directive 97/23/EC.

- European Union Construction Products Regulations No. 305 of 2011.
- European Union (Construction Products) Regulations 2013 - S.I. No. 225 of 2013.
- S.I. No. 17/2017 - Housing (Standards for Rented Houses) Regulations 2019
- European Directive ErP (Energy related Products) 2009/125/EC.
- National Rules for Electrical Installations IS 10101:2020
- IS 238 - Copper Tubes.
- IS 265 - Installation of Gas Service Pipes.
- BS 2767 - Specification for manually operated copper alloy valves for radiators.
- EN 12735
- BS 12165 - Above Ground Stopcocks.
- BS EN 1057 - Copper and copper alloys. Seamless, round copper tubes for water and gas in sanitary and heating applications.
- BS EN 1329-1 - Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure. Unplasticised poly (vinyl chloride) (PVC-U). Specifications for pipes, fittings and the systems.
- BS EN 3958-4 - Thermal insulating materials.
- BS EN 12056 - Gravity Drainage Systems Inside Buildings.
- BS EN 12449 - Copper and copper alloys. Seamless, round tubes for general purposes.
- SDCC Specifications Mechanical and Electrical specifications.
- SEAI Domestic Technical Standards and Specifications Version 1.3 2025 -

1.9 Duties, taxes and value added Tax

The Contractor must include for all excise duties, taxes and all charges under Legal Requirements. All work to be priced exclusive of VAT. SDCC are the Principal Contractor in relation to the payment of VAT to the Revenue Commissioners.

1.10 Tax clearance status

The Contractor will be required to provide all information to SDCC to allow for review the Contractors current Tax Clearance status from the Revenue

Commissioners. It will be a condition for the awarding of this contract that the Contractor must be able to satisfy this requirement.

1.11 Insurances

As per SAQ requirements.

1.12 Payments and retention

Payments to the Contractor for the completed and tested works will be made in the form of two stage payments. The first payment will be made on completion of works relating to the heating system and windows and doors. The second payment will be made on completion of the remaining works to the property. Invoices will only be processed following receipt of all required correctly formatted information post installation.

1.13 Liability and defects period

The Contractor will be responsible for the rectification of any defects that develop after handover of the installation during the defects liability period which shall be for a period of no less than 18 months post completion, this shall include all labour and material. Date of Liability and defects period will commence on date of sign off sheet for each property by both contractor and SDCC engineer on site.

1.14 Safety, health and welfare

Prior to commencing work on any site, the Contractor must produce a current safety statement, risk assessments and a method statement, together with all other job specific documentation required in accordance with all applicable, relevant & current Health, Safety & Environmental legislation, codes of practice and industry best standards. All risk assessments and a method statement must be submitted to SDCC via the Sharefile system prior to the commencement of any work taking place on site. RAMS shall be submitted per installation / address. Periodic unannounced inspections shall take place by SDCC staff and appointed persons to carryout adherence to health & safety requirements in addition to submitted documentation. The contractor shall read and be aware of the Preliminary Safety & Health Plan which has additional information on inspection scores and requirements.

1.15 Child safeguarding

Garda Vetting: All contractors, staff and subcontractors used for South Dublin County Council works may be required to obtain Garda clearance. The contractor shall provide a statement to SDCC for their operatives confirming

that there is no criminal record or specific information relating to their operatives which would prevent same from being successfully vetted.

The contractor shall as part of their submission provide their “Lone Working Policy” for review and comment. This policy is to be uploaded in the pre-upgrade Sharefile folder for each installation prior to works commencing.

The contractor (and sub-contractors / suppliers) shall review and be compliant with the following documents:

- SDCC Child Safety Statement
- SDCC Policy & Procedures for the Protection and Safeguarding of Children
- Children First National Guidance 2017
- Children First Act 2015

The contractor shall prior to the signing of the contract agree to act as PSCS in line with HSA requirements for the installations prior to any works commencing.

1.16 Temporary measures during contractor activities

The required works will be carried out in dwellings with tenant in-situ. The contractor should consider how they will execute the works in this environment with consideration given to occupants and contents. The contractor should provide temporary measures to protect internal of the dwellings where there is a likelihood that there will be dust/debris/water as a result of construction activities. All floors to be temporarily covered with temporary flooring protection. The temporary flooring should not cause a slip, trip or fall hazard.

The contractor is to provide adequate temporary heating for the duration that the heating system will be down for each property and should be considered prior to works to central heating system. Temporary heating to be in the form of electric oil filled radiators. One 2.0KW oil filled radiator to be provided to living room and one per bedroom. Contractor to ensure that all electric oil radiators are in good order and PAT tested.

The contractor must provide temporary power for the execution of all their works on site. The contractor and/or subcontractors must not use wall sockets within any property for the purpose of powering or charging equipment.

1.17 Working hours

The Contractor must ascertain from the tenant if there are any limitations on working hours during the course of the works. Generally working hours will be 08:00 – 17:00 Monday to Friday, 08:00-14:00 Saturday. Outside of these hours permission must be approved by the tenant and SDCC engineer. The Contractor must fully comply with any limitations on working times imposed by the tenant or SDCC.

1.18 Control of noise and pollution

Comply with Statutory Requirements relating to control of noise levels on each particular site. The generation of noise resulting from installation works outside normal working hours, will not be permitted. The Contractor must not contribute to or cause pollution. The Contractor must not store or dispose of any materials, rubbish or redundant equipment on the site, or surrounding areas.

1.19 Working with Asbestos containing materials

The Safety, Health and Welfare at Work (Asbestos) Regulations 2006-2025 and the 2025 Code of Practice for the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations, 2006-2025 apply to all work activities which expose persons to risks arising from the inhalation of dust from asbestos or asbestos containing materials. The regulations apply to all workplaces (including domestic construction work) where there is a risk of asbestos exposure during work activities.

Asbestos have been widely used in construction materials for a number of purposes in buildings built prior to the year 2000. SDCC have provided Asbestos surveys with this tender and as such should be reviewed to inform the contractors tender rates and how they will intend to execute the works required under this contract. The contractor's method statement shall detail how they intend to manage asbestos containing materials during the works.

The Contractor is also advised to review relevant information related to working with asbestos containing materials which can be found at www.HSA.ie Asbestos Legislation - Health and Safety Authority. The contractor is also advised to review Asbestos: The licensed contractors' guide - HSG247 to ensure that there is no risk posed to operatives and tenants of the properties.

1.20 Site protection and housekeeping

During the works the Contractor must ensure that areas where work is being undertaken that adequate and suitable physical protection to the building fabric is put in place and always maintained. Temporary portable fire extinguishing equipment and fire blankets must also always be in place in the

work area in accordance with the submitted particular risk assessment and method statement.

The Contractor must provide adequate physical protection for all equipment and pipeline accessories during the work. The protection must be strong and impervious to guard against the activities of all following wet and dry trades.

Redundant items of equipment must be removed from site promptly and must not be stored on any adjoining property or allowed to cause a work or access hazard or obstruction at any time.

1.21 Waste management

The contractor is responsible for the removal and disposal of all construction waste to a licensed facility. Contractor to submit a waste management plan detailing how items will be disposed of. All materials eligible for recycling should be separated and recycled appropriately. Loose rubbish, the accumulation or disposal of rubbish on site will not be permitted.

All recycling and disposal of packaging to be in accordance with the Waste Management Legislation as implemented by the Environmental Protection Agency Act, Waste Management Act and the Protection of the Environment Act.

1.22 Equipment and materials

The proposed equipment and materials must be submitted as part of the tender submission as per appendix A. The contractor must as part of their submission confirm the proposed item meets the quality and technical requirements as listed in this specification. The contractor shall be trained by the manufacturer on the specific equipment being proposed for installation.

All equipment and materials to be incorporated into the installation must be new, unless otherwise specified. Handle, store and fix equipment and materials with care to ensure that they are in perfect condition when incorporated into the works and eventually handed over to the client. Handle, store and fix each item in accordance with manufacturers' information and recommendations. Submit copies of the manufacturers' information and recommendations to the SDCC.

Where samples of finished work are specified, obtain approval before proceeding with the work. During the course of the contract works and as materials and equipment are delivered to site, the Contractor must remove from each item of equipment and material incorporated in the works, all manufacturer's installation and maintenance documentation and manuals.

All these documents and manuals must be safely retained in a secure container for eventual incorporation in the record manual as outlined elsewhere in this document, 1 No. hard copy to be left on site and 1 No. soft copy to SDCC.

For each separate item of equipment the Contractor, at the time of ordering, must insist that the necessary installation, operating and maintenance documentation accompanies the relevant item of equipment when delivered to site.

Equipment subject to EU ErP regulations shall come with all required ErP documentation including product label, product fiche, system label and system fiche.

1.23 Competency of trades, quality and workmanship

All work must be completed by a competent person. Only fully qualified, certified, time-served operatives with the necessary training, specific skills and experience in the appropriate discipline will be permitted to undertake the installation work associated with each separate system. The installation of heat pump heating systems shall only be carried out by an installer certified in line with Section 1.2.9 of TGD-L 2019 of the Irish Building Regulations. Any person carrying out works on the heat pump system or connecting to the heat pump system shall be trained and certified by the heat pump manufacturer for the specific unit being installed – evidence of same will be required and requested as a prerequisite prior to installation commencing. The competent persons shall have the expertise, qualifications and calibrated equipment to carry out the installations, testing and commissioning required to fully comply with all relevant standards and utility requirements. The installer shall be fully responsible for and exercise total control over all activities that affect the quality of the installation work and of the materials to the requirements of this specification and aforementioned technical / regulatory standards

For the removal of the existing gas boiler systems all operatives working on the natural gas boiler and gas pipework installations, must be a fully registered member of the Register of Gas Installers of Ireland. The firm undertaking the work on natural gas installations, must also be a fully registered member of the Register of Gas Installers of Ireland (RGI). RGI badges shall be displayed at all times.

All electrical work must be completed by a registered electrical contractor. All electrical work must be completed in accordance with SDCC electrical specifications.

Trades outside of mech and elect (Insulation, window/door fitters, chimney specialists must demonstrate competent to carry out the required works such as national guild craftsman, training certificates from manufacturer, solar certification.

The Contractor must ensure that all workmanship, materials and equipment are installed and carried out to an acceptable standard and in accordance with this specification. Any work considered by SDCC to be sub-standard, must be redone and equipment replaced as necessary.

Failure by the Contractor to comply with such an order, may result in the works being rectified by others appointed by SDCC. All costs incurred to correct the defects will be recoverable by deducting an appropriate amount from the remaining monies due to the

Contractor.

1.24 Evidence of enclosed Works

All works that will be concealed later, or at any stage in the project, must be recorded by photographs. The Contractor must also give at least 48 hours' notice to the SDCC inspector or representative, in order that inspections can be undertaken, prior to concealment. Where notice is not given in time, and/or works are subsequently concealed, without the necessary inspection or photographic record, the Contractor may be required to uncover the work and reinstate it at their own expense.

Before proceeding with work that will cover and conceal previous work, or allowing other trades to do so, the Contractor must give early notice to the SDCC inspector or representative allowing an opportunity to inspect the work before it is covered up.

Inspections of concealed works will not in any way relieve the Contractor from full responsibility for the quality of the work throughout.

1.25 Builders work and fixings to the structure

The Contractor must include for all builders' work associated with the installation. This will include drilling or forming of openings and holes to accommodate the heat pump and pipework services together with all making good. All openings whether formed or drilled, must be made good with material similar to the building element through which the removed flue and new / old pipework passes. Where the building element a fire compartment, the making good must take the form of suitable fire rated material. This process may require the services of a specialist firm.

The Contractor must ensure that all fixing devices and anchors used for attaching pipework and equipment to the building structure, in all the

installations, must comply fully with the ‘Code of Practice for the Design and Installation of Anchors’ as published by the Health and Safety Authority of Ireland.

1.26 Electrical works

The Contractor must allow for the removal of the existing electrical supplies to the existing heating / hot water equipment and ancillary equipment. The wiring to the new heat pump and ancillary equipment, including all protective and isolation devices must be new and all fully labelled. The existing wiring must not be re-used; wiring is to be tested and certified acceptable by a Registered Electrical Contractor (REC).

All electrical work must be undertaken, tested and certified by a REC. The REC must also provide a completion certificate in accordance with the National Rules for Electrical Installations IS 10101:2020.

1.27 Order of works

The installation shall be carried out in a timely manner and should take no more than 6 weeks in general for the entire property upgrade. Should the contractor require additional time to complete the schedule of works or unforeseen works the contractor must seek approval from SDCC engineer. Should the contractor fail to complete the works schedule in this period of time it will be at the discretion of SDCC engineer to grant permission to the contractor to enter and complete works. Should contractor fail to complete the works during the defined period they may be directed to forfeit the unfinished works and may not seek compensation. The Contractor will be responsible for all other disciplines required to undertake and complete the works such as the electrical installation and any necessary builders work related to the heat pump, heating or hot water installation. SDCC may from time to time, prioritise installations, and the Contractor must action the projects in the order advised. Where the works schedule specifies a heat pump, the installation of the heat pump must take place prior to commencement of all other works to that dwelling.

The Contractor is to submit a detailed plan on how they anticipate carrying out the works and attend a site visit with SDCC engineer prior to the commencement of the works to discuss all particulars.

1.28 Testing, commissioning and setting to work

The Contractor shall carry out all necessary tests on the pipework, equipment and system prior to commissioning and setting it to work. The new heat pump system must be commissioned and set to work by the

manufacturer's engineer or certified installer (not the contractor or Heat pump subcontractor) and a full record made of all the tests as outlined in this specification and Appendices. The complete system operation must be undertaken and all equipment checked and confirmed as functioning correctly and in accordance with the specification.

This work shall include the testing of controls, programmer and safety interlocks. The Contractor shall set the programmer with the time schedules provided by the SDCC engineer.

Test and commissioning certificates must be submitted to SDCC when all tests are completed and included in the record documentation at the conclusion of the project.

When all the necessary tests are completed, all commissioning has taken place, the system is set to work and it is operating in accordance with the specified parameters, the correct operation of the system and controls must be fully demonstrated to the client at a pre-arranged time suitable to all participants.

1.29 Labelling and diagrams

The contractor is to ensure that all items of All items of mechanical and electrical equipment, plant items and accessories, shall be provided with labels clearly indicating their reference and name and as agreed with SDCC. Labels to be machine printed. They shall be constructed from 3 ply 2mm Traffolyte or approved equivalent, securely fixed to the item concerned. Lettering shall be 20mm high block capitals. Abbreviations will not be allowed. labels shall be affixed to all equipment supplied in a directly visible location on all items including but not limited to cylinder / indoor heat pump, outdoor heat pump, cables etc. When the heat pump installation is completed an installation identification label shall be affixed to the front of the heat pump in a clearly visible position stating installation date, contractor and serial number of the heat pump. wiring schematic and piping schematic for each installation shall be generated, 1 No. laminated copy size A3 per page left on site and 1 No. copy saved in Sharefile folder. The wiring diagram shall show boards, breaker sizes, cable terminations using references on boards and equipment wiring blocks e.g. 32A Type B MCB wired to heat pump terminal XYZ4.

1.30 Changes to the works (variations)

Unforeseen variations could potentially occasionally occur on projects; all variations or changes must be approved in advance of being carried out. The Contractor shall submit a Design Change Request (DCR) quotation to SDCC

engineer referencing the Address, additional costs and extra works in advance of any variations being carried out, SDCC will revert with acceptance to proceed or refusal of same.

Under no circumstance shall verbal advice from SDCC staff or appointed representative be taken as approval. The Contractor is required to submit a separate quotation for the additional works to the SDCC engineer and receive a DCR authorisation email from same. No invoice will be processed without a written authorisation email from SDCC engineer. It is the contractor's responsibility to obtain the written authorisation, failure to submit same will result in invoices not being processed.

1.31 Project meetings

The Contractor must be available to attend project meetings as required at the commencement, during and at the conclusion of each installation. These meetings will take place, as necessary on site and in County Hall of South Dublin County Council. There shall be no charge by the contractor for such meetings.

1.32 Training to tenants on operation

The contractor is to factor in costs and time associated with training of tenants on the operation and of the new heating system. The contractor is to provide a laminated guide the tenant on how to operate the system, with guide to be located in PVC pocket to hotpress door. The tenant should be confident in:

- Turning the heating system on & off
- Switching between timed and manual operation
- Raising and lowering the temperature
- Switch between heating and hot water to hot water only

1.33 Handover files

On completion of the project the contractor is to provide all documentation for the materials and items they have installed. These items must be uploaded to a sharefile folder setup by SDCC to which the contractor will be invited to via email. There is a considerable time and effort required for the collection of this information and the contractor should bear this in mind during their tender submission. The contractor will have 14 working days to upload the following documents for each individual property:

Attic Insulation

- Product Data certs & declaration of performance for the insulation
- Confirmation of the U-value, Thermal resistance
- Installer letter on company headed paper stating:
 - Address
 - Date
 - Name & Type of insulation
 - Thickness of insulation installed
 - BBA/ NSAI cert number of the insulation product fitted
 - Certification number of the item

- Warranty

Wall Insulation

- Product data certs & declaration of performance for the insulation
- Confirmation of the U-value, Thermal resistance
- Installer letter on company headed paper stating:
 - Address
 - Date
 - Name & Type of insulation
 - Thickness of insulation installed
 - BBA/ NSAI cert number of the insulation product fitted
 - Certification number of the item
 - fire performance certifications
 - Warranty

Window and Door information & certs

- Product data certs & declaration of performance for each front door, rear door and windows
- Certification of U-value, thermal resistance & solar gain performance for each Front door, rear door and windows
- Window Energy Performance (WEP) rating/BFRC
- Installer letter on company headed paper stating:
 - Address
 - Date
 - The name & items installed – doors / windows
 - Certification number of the item
 - Warranty

New Central heating system

Pressure Test certs on central Heating system –

- Letter on contractor headed paper
 - Date and time of test
 - Address of house
 - Results and description of test
 - Time stamped photograph of gauge and test setup
 - Signed by contractor & SDCC engineer. Heat

pump

- Heat Pump product data sheets & declaration of performance
- User manual
- Heat pump designer sign off Documentation
 - Tab 1 – Designer installers sign off Form – to be fully completed, page to be signed by the mechanical installer or authorised person from contractors' company, page to be scanned.

- Tab 2 - Heating design tab must be fully completed
 - Tab 3 – Radiator output conversion tab must be fully completed.
- Warranty -The mechanical contractor must activate the warranty associated with the heat pump install and provide a certificate from the heat pump manufacturer confirming the warranty is active. The warranty must clearly state the date, address, full details of the install and signed by the manufacturer. All terms and conditions associated with the warranty must be submitted.
- Manufacturer or 3rd party Commissioning letter on headed paper
 - Date and time of test
 - Address of house
 - Signed by contractor & SDCC engineer.

Domestic hot water cylinder

- Cylinder product data sheets & declaration of performance
- User manual
- Warranty

Heat emitters

- Heat emitter product data sheets & declaration of performance
- User manual
- Warranty
- Thermal image survey

Electrical and Gas related works

Safe Electric Certs and RGI certs

- Cert for all electrical work. A Safe Electric completion cert (cert 1 / cert 3) accompanied by a test record sheet must be submitted. It must be fully completed including MPRN, dates, address and an exact outline of the works completed.
- Cert for all gas work. A RGI cert accompanied by a test record sheet must be submitted. It must be fully completed including GPRN, dates, address and an exact outline of the works completed.

Blocking up of open fires

- Letter on Contractor headed paper.
 - Address of house
 - Date
 - Works involved in sealing of chimney.
 - Signed by Contractor

Mechanical Ventilation

- Product data sheets and declaration of performance
- Manual
- Warranty
- Balancing records in L/S witnessed by SDCC representative.
- Recd certs
- Commissioning letter contractor headed paper.
 - Address of house
 - Date
 - Signed by Contractor

Handover property completion form

- SDCC form signed by contractor and SDCC representative
 - Address of house
 - Date
 - Works involved
 - Recorded documentation that issued snags have been completed.

2.0 Specification and works requirements

The following section will detail the required specifications for this contract.

All works carried out must be in accordance with recent version of documents:

[S.R. 54 NSAI Code of Practice for the Energy Efficient Retrofit of Dwellings](#)

[SEAI Contractors Code of Practice](#)

[Domestic-Technical-Standards-and-Specifications.pdf \(seai.ie\)](#)

[Better Energy Homes Quality Assurance and Disciplinary](#)

[Heat Pump Code of Practice - Installation Guidelines](#)

[S.R. 50-4:2021 Building services - Part 4: Heat pump systems in dwellings](#)

[S.R. 50 Series: Standards for Modern Plumbing and Heating | NSAI](#)

South Dublin Co. Co. Mechanical Specification (Appendix of this document) South Dublin

Co. Co. Electrical Specification (Appendix of this document) Preliminary Health and

Safety Plan

[Safety, Health and Welfare at Work Act 2005](#)

[The Safety Health and Welfare at Work \(Construction\) Regulations, 2013](#)

[Department of Housing, Local Government and Heritage - Technical Guidance Documents](#)

[S.I. No. 386/2006 - Safety, Health and Welfare at Work \(Exposure to Asbestos\) Regulations 2006](#)

[S.I. No. 589/2010 - Safety, Health and Welfare at Work \(Exposure to Asbestos\) \(Amendment\) Regulations 2010.](#)

2.1 Attic Works

This section relates to items of work within/at the attic space/roof level.

2.1.1 Clearing of attic

A situation may arise where the tenant or SDCC is unable to clear/empty the attic of general household items prior to the contractor commencing works within the attic, where the items prevent the contractor from carrying out the required works. This item is for the provision of labour to carefully relocate all items within the attic floor space to a room within the property. If a skip is provided by the contractor under item A2 of pricing document, items will be disposed of in skip.

Items typically consist of plastic refuse bags/cardboard boxes/PVC box containing inorganic general household items.

2.1.2 Supply of skip

Where there is a need to dispose of all household items in the attic from item A2, the contractor may be requested to provide a 4 cubic yard skip for the disposal of items. The skip should be sourced from a waste management operator with a permit for a licensed waste facility. A waste docket from the licensed waste facility where the waste was disposed of is to be provided to South Dublin Co. Co. where any skip is used for the

duration of the contract.

Temporary location of the skip must be approved by the engineer prior to drop off of the skip. Depending on site location and restrictions, a permit maybe required for the duration the skip will be placed on site. It is the responsibility of the contractor to ensure that skip does not cause a hazard or obstruction to vehicular/pedestrian traffic or access to public/private property. It is the responsibility of the contractor to ensure that the skip is visible to traffic at night, secure and only filled with items from the attic of the property where energy retrofit works are being completed by SDCC. The contractor will retain full responsibility for the skip for the duration of hire.

2.1.3 Removal of flooring within attic space

The contractor is asked to provide a price for the provision of lifting of floorboards installed by the tenant in order to allow for the laying of attic insulation. Typically, this consists of timber boards fixed in place on top of the joists with screws/nails/glue.

The contractor will lift these boards and dispose to a licensed facility. Quantity as per pricing document.

2.1.4 Supply and installation of raised storage platform

Due to the increase in the depth of attic insulation a raised storage platform will be needed for the purpose of storage and prevent compression of the attic insulation. The dedicated storage platform should be 4m² in area and positioned immediately beside the attic hatch but not obstruct the direction of access from the attic hatch. The platform should be above the 350mm deep insulation and allowance of 25mm for deflection between the underside of the platform to the insulation between joists below. Timbers used should be C16 grade 2"x4" (100mmx44mm) laid on edge horizontally across roof joists (minimum of 3 pieces) with a 12mm plywood top all mechanically fixed. Materials shall comply with the requirements of Eurocode 5. Structural timber shall be strength graded to comply with EN 14081. All to approval of site engineer.

2.1.5 Supply of install raised walkway

Due to the increase in the depth of attic insulation a raised timber walkway must be constructed in order to provide access to service the water storage tank and Demand control ventilation unit. Walkway must be a minimum 500mm wide, a landing platform 500mm wide should be constructed to surround the full perimeter of the attic hatch opening and lead directly to the cold-water storage tank base and must 25mm be above top of the 350mm deep insulation between the joints. Timbers used should be C16 grade 2"x4" (100mmx44mm) laid on edge horizontally across roof joists with a 18mm OSB or 12mm plywood mechanically fixed. The walkway should provide a clear passageway with no trip hazards. Materials shall comply with the requirements of

Eurocode 5. Structural timber shall be strength graded to comply with EN 14081-1. All to approval of site engineer.

2.1.6 Supply & install draught stripping to attic hatch

Supply and fit draught stripping to perimeter of attic hatch approx. hatch dimensions 600mm x 700mm (2.5 linear metres). White PVC plastic carrier with a white compressible rubber edge strip fastened in place with adhesive and nails. The draught strip must be fully functional and must have full compression to all edges of hatch when closed. Stormgaord or similar product.

2.1.7 Supply & installation insulation to attic hatch

Supply and fix 75mm thick PIR rigid insulation board to back of attic hatch approx. hatch dimensions 600mm x 700mm. PIR rigid insulation board to be of thermal conductivity of 0.022 W/mK or better. Insulation board to be fixed in place with suitable adhesive that is used for bonding fiberglass, extruded and expanded polystyrene foams. Edges to of insulation board to be wrapped in duct tape to sufficiently to prevent damage to board over lifetime.

2.1.8 Supply & installation of roof vent tile

The contractor is to supply and fit concrete or slate roof vent tile type & quantity as per pricing document. Roof vent tiles to match surrounding tile/slate colour, driving rain and deluge rain resistance, integral 4mm insect screen, be low profile cowl with free ventilation area 20,000mm². Roof tile vents to be Glidevale G5 Universal tile for Concrete roof or similar and Glidevale G5 Slate Vent 600 x 300 for slate roof or similar.

The ventilation tiles to be positioned at low level on the roof slope (i.e. within approximately 450 mm up the slope above the top of the insulation, which is approximately 300 mm vertically above the upper most surface of the ceiling insulation for a roof with a 45° pitch) and vents should be distributed to ensure sufficient cross ventilation is achieved. Roofing underlay to be kept elevated by folding underlay to top batten and fastened in place. Underlay should not be excessively cut to the point where it is sagging or allows a clear path of water to run through the opening created in the felt. Surrounding tile surfaced to be free from dust/particles where adhesive strips to be used. Reinstall of surrounding tiles to ensure adequate compression around ventilator foam seal. Fixings to be aluminium or stainless steel.

All installation as per manufacturer specifications. Roof Tiles are manufactured to exacting standards in compliance with I.S. E.N. 490: 2005

Concrete Roofing Tiles & Fittings and should be fixed in accordance with the Irish Code of Practice for Slating and Tiling S.R. 82

2.1.9 Supply & installation of ceiling level attic/roof insulation

The contractor is to supply and install mineral wool insulation must be BBA/NSAI

certified with a thermal conductivity of 0.044W/mK or better to the required level of insulation as set out in the pricing document and works schedule. The pricing document will provide a sum total m2 for each property type (A, B, C etc) while the Works Schedule document will clarify the depth and m2 for each individual property.

The insulation should be laid cross ways to the previous layer and there should be no gaps between the joists or layers of insulation. Insulation should be placed under all storage/tank platforms with 25mm from the top of the insulation to the underside of the platform base. The Insulation must be brought right to the wall plate while ensuring that the eaves are clear for cross ventilation. Wherever possible, electrical cables should feed over the insulation. Cables to high load appliances, such as cookers and showers, should remain uncovered or lifted above the insulation. Where this is not possible, and to provide adequate ventilation, a minimum space of 75 mm around the cable is to be retained along its full length within the loft space. Insulation should not be laid directly over recessed lights.

2.2 External Walls

2.2.1 Extraction of cavity wall insulation

Where it is proposed to insulate the cavity of external walls with bead insulation and the properties have been previously insulated with mineral wool there will be a requirement to remove this blown wool insulation. Cavity sizes will vary from 40mm up to 100mm wide. The external finishes will vary from brick to render and will need to be restored to match surrounding finish. There may be a requirement to install a brush to prevent the extraction of insulation from an adjoining property, this is to be assessed by the contractor prior to works.

The contractor will supply a detailed methodology for how they intend to carry out the extraction of the blown wool/fibre. The contractor shall survey the walls with a borescope prior to extraction and perform a borescope post extraction. The contractor shall provide video and still images of the borescope pre and post survey at regular intervals of 1m to demonstrate that the cavity wall has been cleared of all insulation. Contractor to extract cavity

fill and dispose to a licensed facility. The contractor shall produce A certificate of cleanliness on completion of the works. Works will not be accepted unless engineer is satisfied that the works have been completed with full extraction of the mineral wool. The contractor will close any core by reinstating the extracted wall cores. All holes formed using drill to be sealed with mortar and finished to match existing surrounding finish. All works to approval of site engineer.

2.2.2 Cavity pumped EPS bead insulation

There may be some properties where the cavity to the external wall is partially full or completely free of insulation. It is intended to fill these cavities with pumped bead insulation, quantity as per pricing document.

Contractor to supply and install bonded bead insulation with a thermal conductivity of 0.33W/mk or better to cavity depths of 0-100mm. Cavity Wall Insulation must be installed to fill the full depth of the cavity. All holes drilled for the installation of the bead to be filled with mortar and finished to match existing surrounding finish. Cavity bead insulation works to be completed post installation of the windows and doors. Where there is an adjoining dwelling/s to the dwelling being pumped with bead insulation, a cavity brush is to be installed to prevent spillage of the beads to the adjoining property. such as a terrace house a brush. Polystyrene beads cannot be installed in a cavity wall which has existing electrical cables that are not in a conduit. The contractor is responsible for ensuring that any cables within a cavity a sleeved, if not a split flexible conduit must be installed prior to the bead being pumped into the cavity. The contractor will be responsible for remedial works should they fail to ensure that all cables within the cavity are protected by a sleeve.

Refer to SEAI "Domestic Technical Standards and Specifications " Version 1.6 2024; Section 6.2 Cavity Wall Insulation and Appendix 2: Summary Table of Competencies and Standards : External Wall Insulation

Contractor Competency: Cavity wall insulation Contractors must be approved by the NSAI Agrément scheme. Contractors carrying out Cavity wall insulation works must be on the directory “NSAI Agrément Registered Blown Cavity Wall Installation Companies” and must carry out the installation to the standards required by this approval and certification. Materials used in the insulation of a cavity wall must be certified by the NSAI Agrément. Cavity Wall Insulation must be installed to fill the full depth of the cavity. In as much as is physically and economically feasible, this must achieve a U-value of 0.33 W/m²K or better for external walls. Minimum

cavity depths apply depending on the product as per NSAI Agrément, and residual cavity depths must never be less than 40 mm. "

"All cavity wall insulation must be installed in accordance with the specifications laid out by the system supplier and in accordance with the relevant system's NSAI Agrément certificate and clause 7.3.4 of S.R. 54:2014. b. The insulation material must be suitable as per clause 7.3.4.2.5 and 7.3.4.2.6 of S.R. 54:2014c. Please refer to manufacturer's instructions and the system's NSAI Agrément certificate before proceeding with works in cold weather. Low temperatures may affect the adhesive used to bond cavity beads together and this may compromise the integrity of the cavity wall insulation. "Survey of walls before installation by a trained surveyor; Report including a borescope survey to be provided to Client; This is to ascertain the suitability of the property for the recommended insulation system.

2.2.3 External wall insulation

Works to include a complete pre works survey by a trained surveyor on behalf of the approved Contractor, condensation risk analysis from the manufacturer of the product, temporary removal of all services (doorbells, satellite dishes, aerials, waste pipes, downpipes, handrails, alarms, cctv camera, letter box) supply and installation of NSAI approved External Wall Insulation (EWI). Retrofitting of EWI system (60mm white EPS

closed cell low absorption plinth insulation board max thermal conductivity 0.032 W/mK Kore EPS200 or similar, starter track with uPVC starter mesh, 100mm graphite grey EPS EWI max thermal conductivity 0.031 W/mK Kore EPS70 or similar; including 100mm mineral fibre rockfiber or similar EWI breaks where required with a max thermal conductivity of 0.036W/mK, 100mm graphite grey EPS EWI to reveals, uPVC external over cill 45mm overhang incorporating drip detail, basecoat, 2 layers reinforcing mesh, Finish coat 10-12mm of white acrylic render. Provide and fix all necessary, bell casts, beads, movement and expansion joint beads etc. Approved EWI installed in accordance with the specifications laid out by the system supplier and in accordance with the relevant system's NSAI Agreement certificate.

Temporary removal of all services (doorbells, satellite dishes, aerials, waste pipes, vent stack pipe, downpipes, handrails, alarms, cctv camera, letter box) to be reinstated with fixings back to concrete structure. Substrate surface to be brushed to ensure it is free from dust and organic matter prior to application of surface primer, Class B – s3,d2(European) fire rating as defined in Building Regulations; 60mm EPS plinth board, 100mm thick graphite grey EPS with 100mm dual density mineral wool (rockfiber or similar) insulation board fire rating euroclass A1 to minimum 110 kg m³ at

adjoining properties; starter track with uPVC starter mesh mechanically fixed at 300mm centres at DPC line, EWI fixed to solid concrete block work with mechanical fixings and adhesive material with no gaps between boards; 100mm EWI to reveals and over external window sills (concrete sills to be cut back flush to existing brick/block face), uPVC external over sill at adequate fall with endcaps ensuring window weep holes are not blocked, fixing of EWI number and spacing to manufactures Agreement Certificate; Base coat 5-6mm minimum; to include 2 layers of alkaline resistant mesh minimum 160g per m² (GSM) to be overlapped 100mm at joints and corners of openings by attaching mesh with dimensions of 200mm by 350mm-placing it at an angle of 45 °; high tensile mesh to be GSM value of 200g to area of high impact, Proprietary corner beads should be formed to all exposed and vulnerable edges and fully lapped with supplementary mesh reinforcement to all corners, Finish coat 10-12mm of white acrylic render. Provide and fix all necessary, bell casts, beads, movement and expansion joint beads etc. As required; all reveals to be in smooth sand and cement based finished; moving of all existing pipework and reinstatement to original state; include for secondary low modulus silicone sealant as required; including, parapets, plinths, reveals & PVC soffit. All plywood grounds required for re fixing of services with all penetration through EWI render to be sealed with grommet or mastic and other items to be included as per manufactures instructions; waterproof and breathable finish; 60-year life time expectancy minimum; certification required to minimum 11m in height; all as per manufactures specification and recommendations; to include all scaffolding and access requirements to comply with Health Safety and Welfare at Work (Construction) Regulations. Costs to include for Provide temporary covering to windows/Doors/Railings/lighting fixtures/heat pumps and surrounding ground. All surfaces to be protected with protection film during rendering process using a low tack self-adhesive protection film and to be removed and disposed of by the contractor upon completion of external render. All surfaces to be cleaned down on completion of

external render installation.

Fire Barrier Locations- Fire spread should be contained to the floor level immediately above the origin of the fire using Euro class A1 fire rated mineral wool. To achieve this in both thermoplastic insulated systems e.g. expanded polystyrene (EPS) and thermoset insulated systems e.g. phenolic foam, horizontal “fire barriers should be installed at each floor level above the first-floor level i.e. starting with the second storey”. A typical fire barrier used with systems comprising of thermoset and thermoplastic insulation components must be constructed of non-combustible insulation material

and cover the full depth of the insulation used in the system. The fire barrier, as recommended in BR135, should be at least 100 mm high and form a continuous band through the full thickness of the insulation layer. With regards to maisonettes and apartments there should be Horizontal Fire breaks at floor slab level and Vertical fire breaks at compartment wall locations.

Refer to SEAI "Domestic Technical Standards and Specifications " Version 1.6 2024; Section 6.2 External Wall Insulation and Appendix 2: Summary Table of Competencies and Standards: External Wall Insulation

Contractors installing EWI must be approved as installers by the manufacturers of the product being installed. Contractors for EWI must also be NSAI Agrément registered External Insulation installers and must carry out the installation to the standards required by the NSAI Agrément Approval Scheme for Installers of External Thermal Insulating Composite Systems (ETICS). "The external wall insulation system must be certified by the NSAI Agrément or equivalent. This measure must only be installed on the wall types specified in the NSAI Agrément certificate.

Where any product is not specifically noted on the installers Agreement Certificate is proposed for use SDCC will require confirmation from both the Agreement Certificate holder and the product manufacturer that the product is appropriate. SDCC reserves the right to refuse any product for use not specifically listed on the Agreement Certificate as part of the system.

All products used must conform to EN 13501-1 and building regulations specifically Building regulations technical guidance document B Fire safety 2006 and fire safety volume 2 dwelling houses 2017, technical guidance document part L conservation of fuel and energy 2022.

2.2.4 Working around exiting services

The contractor is to supply a rate for working around existing services. Works may to include temporary removal of all services (doorbells, satellite dishes, aerials, waste pipes, downpipes, handrails, alarms, cctv camera, letter box) and reinstatement. Note Aerials and satellite dishes if moved will need to be realigned for signal.

2.2.5 Timber Grounds

Supply and installation of pressure treated timber grounds (Appropriate timber size to be confirmed by contractor) quantity as per pricing document. Timber grounds to be

mechanically fixed behind external wall insulation for secure fixing of services/items.

2.2.6 Fascia soffit, gutters and downpipes

Contractor to supply a rate for the supply and installation of new Fascia soffit and guttering or retention and reinstall of fascia and soffit. Quantity and colour as per pricing document.

Works to include removal of existing fascia, soffit and guttering. Supply and fit of new fascia soffit and guttering. Removal of existing, supply and installation of new fascia soffit and gutter to be completed prior to installation of external wall insulation. Downpipes to be installed upon final render coat of external wall insulation adequately fixed back to concrete structure using rubber lined pipe hanger, threaded rod and base plate.

2.2.7 External wall vent cover

Contractor to supply a rate for the supply and installation of external wall vent cover - Cowled, White with insect mesh including U-PVC sleeve, fixing and sealant. Contractor to provide scaffolding where required. Quantity and colour as per pricing document.

2.2.8 Extending waste pipes

Contractor to supply a rate for the supply and installation of waste pipe to extend waste pipes of various sizes beyond the increased wall depth due to the installation of external wall insulation. Waste pipe to be u-PVC and to include for all fittings and fixings.

2.3 Windows and Doors

This section relates to items of work related to windows and doors. The Tender should refer to the following documents when completing section C of the pricing document:

- Volume A works Requirements section 2.3 Windows and Doors
- Window and Door Schedule
- Works Schedule
- Dwelling floor plans
- Survey photos

2.3.1 Temporary removal & reinstall of window coverings

Properties may have some form of window coverings (netting, blinds, curtains, shutters). The contractor is to supply a rate for take down and set aside for reinstatement of window coverings for each property (average 6-8 windows per property). Where coverings are fixed directly to window frame contractor will need to remove the brackets also and set aside to be reinstated with star head 6x30mm pozidriv countersunk screws. Where the brackets are removed and to be refixed to masonry wall a 2no. 5.5mm rawl

plug and screw fixing to be used. Reinstated Window coverings should clear handles and operate freely without catching. Contractor should document condition of window

coverings with photographs prior to removal.

Note tenant is to store window coverings and all brackets/fixings.

2.3.2 Temporary removal & reinstall of inertia sensors and magnetic contacts

Some properties have a house alarm fitted with inertia sensors and magnetic contacts fitted to the windows and doors. The contractor is to supply a rate for the safe removal of inertia sensors and magnetic contacts from the existing window/door, reinstalling these to the newly fitted windows and doors. Contractor should ensure that the alarm system is operational prior to removal of the inertia sensors and magnetic contacts by testing with the alarm system activated.

2.3.3 General windows & doors overview & specification

Windows - Works to include a full measure of all windows prior to manufacture by the contractor to ensure frame sits behind reveal maximum tolerance of 5mm from frame to reveal, careful removal of existing window & window board, chipping back of plaster to full depth of all window reveal, disposal of window board, glazing and frames to a licensed waste facility. Install of window with adequate number of fixings (straps & concrete screws) as per manufacturers recommendations, clean substrate free of dust and debris and application of an airtightness tape primer/pva mix and airtightness tape. Pre installation Airtightness tape (Pro Clima Contega Solido SL-D or similar) to be applied to outer surface of window frame prior to install and then taped back to the reveals, head & sill of the window, all to be applied as per manufacturer's instructions. Repair of both internal and external reveals with skimcoat (internal)/ sand cement render (External reveals that have been damaged to be cut back by 50mm to ensure good adherence to concrete block face and minimise cracking) to match surrounding finished painted with 2 coats of brilliant white masonry paint (interior/external paint), silicone sealant applied to frame ope/joints to match colour of frame and uPVC slip to match frame colour externally with white silicone to internal, with a maximum acceptable application of sealant of a 6mm sealant joint depth up to 12mm width. White uPVC internal window reveal slip may be used for finishing (to be agreed with site engineer). Existing internal window board to be replaced with a 12mm plywood base over which a white uPVC window board with end caps to be affixed. Internal uPVC window board should be fixed securely on a level base with timber where required and end

caps to be fitted internally with adhesive. All moving parts to be lubricated with silicone-based lubricant on completion.

Windows to be wiped cleaned externally and internally with all stickers to glazing removed. All removal and installation of windows to be completed by competent persons with all works under supervision of foreman with demonstrated 5+ years' experience in window installations, complete the work in accordance with British

Standard document Code of practice for the survey and installation of windows and external door sets BS 8213-4

:Windows and doors Code of practice for the survey and installation of windows and external doorsets and the manufacturer's guidelines as a minimum requirement.

Where external wall insulation is specified for a particular property, the windows should be installed to the outer most section of the reveal with reveals to be made good plaster finish, all to be agreed with SDCC site engineer. Where tiles are present to reveals and damaged during the works contractor to replace with tile of similar colour if tenant cannot source replacement tile. Exposed Window / door openings must be secured at the end of each working day.

Visual and video guides for window tape requirements:

Web link: [CONTEGA SOLIDO SL installation guide](#)

Web link: [How to pre-tape a window for airtightness and windtightness before it is installed into a wall](#)

Doors - Works to include a full measure of all doors prior to manufacture by the contractor to ensure frame sits behind reveal maximum tolerance of 5mm from frame to reveal, careful removal of existing doors, chipping back of plaster to full depth of window reveal, disposal including glazing and frames to a licensed waste facility. Install of window with adequate number of fixings (straps & concrete screws) as per manufacturers recommendations, clean the concrete block surface thoroughly, remove dust and debris and application of an airtightness tape primer/PVA mix and airtightness tape to internal reveals. Pre installation Airtightness tape (Pro Clima Contega Solido SL-D or similar product) to be applied to outer surface of window frame prior to install and then taped back to the reveals, head and sill of the doorway, all to be applied as per manufacturer's instructions. Repair of both internal and external reveals with sand cement render/skimcoat (internally) to match surrounding finished painted with 2 coats of brilliant white masonry paint, White uPVC internal window reveal slip may be used for finishing (to be

agreed with site engineer), silicone sealant applied to frame ope/joints to match colour of frame and uPVC slip to match frame colour externally with white silicone to internal, with a maximum acceptable application of sealant of a 6mm sealant joint depth up to 12mm width. 10-18mm varnished/laminate half door saddle to close off any gap between threshold and internal floor. All moving parts to be lubricated with silicone-based lubricant on completion.

Doors to be wiped cleaned externally and internally with all stickers to glazing removed. All removal and installation of windows to be completed by competent persons with all works under supervision of foreman with demonstrated 5+ years' experience in window installations, complete the work in accordance with British Standard document Code of practice for the survey and installation of windows and external door sets BS 8213-4

:Windows and doors Code of practice for the survey and installation of windows and external doorsets and the manufacturer's guidelines as a minimum requirement.

Where external wall insulation is specified for a particular property, the windows should be installed to the outer most section of the reveal with internal reveals to be made good plaster finish (all to agreement with SDCC engineer). Where tiles are present on reveals and damaged during the works contractor to replace with tile of similar colour if tenant cannot source replacement tile. Exposed Window / door openings must be secured at the end of each working day.

2.3.4 Detailed uPVC window specifications

The following window specifications and installations must be strictly adhered to by the contractor for the full completion of the works. All window units and glazing being installed must meet the requirements of the Construction Products Regulation (Council Regulation no. 305/2011). Must be NSAI Certified or approved equivalent. All window units being installed must carry CE marking and must conform to the requirements of the following standards:

EEN 14351-1:2006 (Windows and doors – Product standard, performance characteristics).

EN 1279-1 (Glass in building. Insulating glass units. Generalities, dimensional tolerances and rules for the system description)

EN 1279-2 (Glass in building. Insulating glass units. Long term test method and requirements for moisture penetration)

The stated U-value of the units must be certified by an appropriate independent body, e.g. NSAI Window Energy Performance (WEP) certification, British Fenestration Rating Council, and have been derived according to IS EN ISO 12567-1 or IS EN ISO 10077 (Parts 1 and 2).

All to the approval of South Dublin County Council engineers on completion.

- uPVC double glazed/triple glazed (specified in pricing doc) casement windows with one top hung opening and one side hung openings uPVC Casement side hung left/right double glazed windows; multi point locks.
- uPVC to be white in colour unless specified in the pricing document.
- Glazing specification - Low-e, Argon filled, warm edge spacer bar glass
- Frame specification – minimum of 5 chamber profile; galvanised steel reinforcing mullions and transoms 1.2mm, on the free sides 1.5mm, on the hinge side 2.0mm; welded joints; lead free; The material content of the uPVC material should be made of not more than 60% recycled PVCu material with the visible surfaces being made of 100% virgin material.
- uPVC double glazed casement windows, windows must be WEP Certified with a Thermal Transmittance or U-Value of not more than 1.4 w/m².K for double glazed windows and U-Value of not more than 1.0w/m².K for triple glazed windows (WEP = Window Energy Performance Rating certified by the NSAI or equivalent) Please refer to the pricing document for lower U value requirements if required on particular houses. All windows units must have a valid BFRC certificate or from an equally approved test centre. The window certification must satisfy the SEAI BER

requirements and in must be in full compliance with BS EN ISO 10077-2.

- Window frames must be internally beaded.
- All windows must be fitted with trickle vents. To be Polyester powder coated Slim aluminium vent with thermal foam or rubber seal, insect grille, with upward deflecting slot. The equivalent area (permanent opening) to be at least 5000mm². Maximum of 29DB in the open position and minimum of 43DB in the closed position. Maximum air permeability 0.41 l/s (Closed Position). Brookvent Airvet SM 100 Trickle vent or similar product.
- Windows that are located 1400mm above ground level must be fitted with safety restrictors, in order to prevent falls.
- Multi point locking to PAS24
- The outside face of the frame must show a 65mm face with a tolerance of + 0.2mm
- Bathroom and washroom windows to be frosted glazing.
- Windows to have friction stay easy clean egress hinge.
- Anti Corrosion ironmongery.
- Warranty – 10 years
- Airtightness tape applied to clean surface internally to concrete block of reveal, pretreatment surface primer to be used prior to taping. Certified air permeability to ift, MO-01/1:2007-01, Abs. 5. Up to 1000 Pa. Pre installation Airtightness tape (Pro Clima Contega Solido SL-D or similar product).
- Window sealant – silicone sealant to be mould resistant, flexible, weatherproof, UV resistant and colour coded to frame colour with a maximum acceptable application of sealant of a 6mm sealant joint depth up to 12mm width To be applied as per manufacturers recommendations.
- Where reveals have been chipped back to during the removal/installation process the reveals are to be made good with a sand cement render and to receive to coats of brilliant white masonry paint.
- Windows must have a design life span of 15 years – structural integrity, colour, glazing, handles & hinges, trickle vents.
- Where External windowsill is installed as part of external wall insulation it should be installed with a slope of 1-2% to the outside. It must protrude 2.5-5 cm beyond the face of the wall.
- All windows must meet the requirement of most recent Building regulations and Technical Guidance Documents:
 - Building regulations 2017 Part B: Fire Safety & Technical Guidance Document B: Fire Safety Volume 2 Dwelling Houses-relating to the use of windows as an alternative means of escape or for rescue purposes
 - Building regulations 2014 Part K- relating to the guarding of windows
 - Building regulations 2022 Part M– relating to adequate provision of access to the building.
 - Building regulations 2013 Part D– relating to requirements for materials and workmanship
 - Building regulations 2019 Part F – relating to requirements for materials and workmanship
 - Building regulations 2013 Part D– relating to requirements for materials and workmanship

- Windows to be supplied with a copy of CE mark, a Declaration of performance (DoP), technical documentation to support that the product complies with the requirements of EN 14351-1:2006 +A1:2016. Since 2013 it is law for all manufacturers of windows and doors to display a valid CE mark on their products.
- Windows must conform to PAS 24:2022 or European Standard EN 1627-1630 classification RC3- Pedestrian doorsets, windows, curtain

walling, grilles and shutters - Burglar resistance - Requirements and classification.

- All windows must carry a permanent mark or stamp showing details of the manufacturer, the job number of the window and the date of manufacture. This mark should be placed on the spacer bar between the windows and be visible.

2.3.5 Detailed uPVC Window specification

The following window specifications and installations must be strictly adhered to by the contractor for the full completion of the works. All window units and glazing being installed must meet the requirements of the Construction Products Regulation (Council Regulation no. 305/2011). All window units being installed must carry CE marking and must conform to the requirements of the following standards:

- EN 14351-1:2006 (Windows and doors – Product standard, performance characteristics).
- EN 1279-1 (Glass in building. Insulating glass units. Generalities, dimensional tolerances and rules for the system description)
- EN 1279-2 (Glass in building. Insulating glass units. Long term test method and requirements for moisture penetration)

The stated U-value of the units must be certified by an appropriate independent body, e.g. NSAI Window Energy Performance (WEP) certification, British Fenestration Rating Council, and have been derived according to IS EN ISO 12567 or IS EN ISO 10077 (Parts 1 and 2).

All to the approval of South Dublin County Council engineers on completion.

- uPVC double glazed French double doors; aluminium low threshold max 15mm chamfered or pencil rounded edges, multi point locks, Restrictors where opening outward, chrome door handles with key lock & stainless screws, stainless or aluminium strike plates /shoot keeps and varnished timber threshold to finish to existing floor.
- Frame specification – minimum of 5 chamber profile; galvanised steel reinforcing mullions and transoms 1.2mm, on the free sides 1.5mm, on the hinge side 2.0mm; welded joints; lead free; The material content of the uPVC material should be made of not more than 60% recycled PVCu material with the visible surfaces being made of 100% virgin material.
- uPVC to be white in colour unless specified in the pricing document.
- uPVC double glazed French doors must be WEP Certified with a Thermal Transmittance or U-Value of not more than 1.4 w/m².K. for double glazed units and U-Value of not more than 1.1w/m².K for triple glazed units (WEP = Window Energy Performance Rating

certified by the NSAI or equivalent) Please refer to the pricing document for lower U value requirements if required on particular houses. All windows units must have a valid BFRC certificate or from an equally approved test centre. The window certification must satisfy the SEAI BER requirements and in must be in full compliance with BS EN ISO 10077-2.

- Double glazed units, low “E” argon filled (90%) glazing units. Safety glass to be 6.8mm laminated to BS 6262 & BS 6201- Glass in Buildings. All glazing must be

installed in accordance with BS 6262 and the double-glazed unit manufacturer's and system supplier's instructions.

- Glazing to be safety glass or laminated.
- Window frames must be internally beaded.
- The outside face of the frame must show a 65mm face with a tolerance of + 0.2mm
- Airtightness tape pretreatment surface primer
- Airtightness tape applied to clean surface internally to concrete block of reveal. Certified air permeability to ift, MO-01/1:2007-01, Abs. 5. Up to 1000 Pa. Pre installation Airtightness tape (*Pro Clima Contega Solido SL-D* or similar product).
- Polyurethane airtightness foam applied to clean surface internally and externally around frame to ope/cavity. Certified air permeability: $\alpha < 0,1 \text{ m}^3$ to EN 12114:2000. Airtightness foam to be applied to underside of internal window board/threshold at cavity side. PU airtightness foam to be CE marked. To be applied as per manufacturers recommendations.
- Window sealant – silicone sealant to be mould resistant, flexible, weatherproof, UV resistant and colour coded to frame colour with a maximum acceptable application of sealant of a 6mm sealant joint depth up to 12mm width. To be applied as per manufacturers recommendations.
- Where reveals have been chipped back to during the removal/installation process the reveals are to be made good with a sand cement render and to receive to coats of brilliant white masonry paint.
- Design life span of 15 years – structural integrity, colour, glazing, handles & hinges, trickle vents.
- All windows/doors must meet the requirement of most recent Building regulations and Technical Guidance Documents:
 - Building regulations 2017 Part B: Fire Safety & Technical Guidance Document B: Fire Safety Volume 2 Dwelling Houses-relating to the use of windows as an alternative means of escape or for rescue purposes
 - Building regulations 2014 Part K- relating to the guarding of windows
 - Building regulations 2022 Part M– relating to adequate provision of access to the building.
 - Building regulations 2013 Part D– relating to requirements for materials and workmanship
 - Building regulations 2019 Part F – relating to requirements for materials and workmanship
 - Building regulations 2013 Part D– relating to requirements for materials and workmanship
- French doors to be supplied with a copy of CE mark, a Declaration of performance (DoP), technical documentation to support that the product complies with the requirements of EN 14351-1:2006 +A1:2016. Since 2013 it is law for all manufacturers of windows and doors to display a valid CE mark on their products
- French doors must conform to PAS 24:2022 or European Standard EN 1627-1630 classification RC3- Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Requirements and classification.

- French doors must carry a permanent mark or stamp showing details of the manufacturer, the job number of the window and the date of manufacture. This mark should be placed on the spacer bar between the windows and be visible.

2.3.6 Detailed uPVC French double door specification

The following window specifications and installations must be strictly adhered to by the contractor for the full completion of the works. All window units and glazing being installed must meet the requirements of the Construction Products Regulation (Council Regulation no. 305/2011). All window units being installed must carry CE marking and must conform to the requirements of the following standards:

- EN 14351-1:2006 (Windows and doors – Product standard, performance characteristics).
- EN 1279-1 (Glass in building. Insulating glass units. Generalities, dimensional tolerances and rules for the system description)
- EN 1279-2 (Glass in building. Insulating glass units. Long term test method and requirements for moisture penetration)

The stated U-value of the units must be certified by an appropriate independent body, e.g. NSAI Window Energy Performance (WEP) certification, British Fenestration Rating Council, and have been derived according to IS EN ISO 12567 or IS EN ISO 10077 (Parts 1 and 2).

All to the approval of South Dublin County Council engineers on completion.

- uPVC double glazed French double doors; aluminium low threshold max 15mm chamfered or pencil rounded edges, multi point locks, Restrictors where opening outward, chrome door handles with key lock & stainless screws, stainless or aluminium strike plates /shoot keeps and varnished timber threshold to finish to existing floor.
- Frame specification – minimum of 5 chamber profile; galvanised steel reinforcing mullions and transoms 1.2mm, on the free sides 1.5mm, on the hinge side 2.0mm; welded joints; lead free; The material content of the uPVC material should be made of not more than 60% recycled PVCu material with the visible surfaces being made of 100% virgin material.
- uPVC to be white in colour unless specified in the pricing document.
- uPVC double glazed French doors must be WEP Certified with a Thermal Transmittance or U-Value of not more than 1.4 w/m².K. for double glazed units and U-Value of not more than 1.1w/m².K for triple glazed units (WEP = Window Energy Performance Rating

certified by the NSAI or equivalent) Please refer to the pricing document for lower U value requirements if required on particular houses. All windows units must have a valid BFRC certificate or from an equally approved test centre. The window certification must satisfy the SEAI BER requirements and in must be in full compliance with BS EN ISO 10077-2.

- Double glazed units, low “E” argon filled (90%) glazing units. Safety glass to be 6.8mm laminated to BS 6262 & BS 6201- Glass in Buildings. All glazing must be installed in accordance with BS 6262 and the double-glazed unit

- manufacturer's and system supplier's instructions.
- Glazing to be safety glass or laminated.
- Window frames must be internally beaded.
- The outside face of the frame must show a 65mm face with a tolerance of + 0.2mm
- Airtightness tape pretreatment surface primer
- Airtightness tape applied to clean surface internally to concrete block of reveal. Certified air permeability to ift, MO-01/1:2007-01, Abs. 5. Up to 1000 Pa. Pre installation Airtightness tape (Pro Clima Contega Solido SL-D or similar product).
- Polyurethane airtightness foam applied to clean surface internally and externally around frame to ope/cavity. Certified air permeability: $a < 0,1 \text{ m}^3$ to EN 12114:2000. Airtightness foam to be applied to underside of internal window board/threshold at cavity side. PU airtightness foam to be CE marked. To be applied as per manufacturers recommendations.
- Window sealant – silicone sealant to be mould resistant, flexible, weatherproof, UV resistant and colour coded to frame colour with a maximum acceptable application of sealant of a 6mm sealant joint depth up to 12mm width. To be applied as per manufacturers recommendations.
- Where reveals have been chipped back to during the removal/installation process the reveals are to be made good with a sand cement render and to receive to coats of brilliant white masonry paint.
- Design life span of 15 years – structural integrity, colour, glazing, handles & hinges, trickle vents.
- All windows/doors must meet the requirement of most recent Building regulations and Technical Guidance Documents:
 - Building regulations 2017 Part B: Fire Safety & Technical Guidance Document B: Fire Safety Volume 2 Dwelling Houses-relating to the use of windows as an alternative means of escape or for rescue purposes
 - Building regulations 2014 Part K- relating to the guarding of windows
 - Building regulations 2022 Part M– relating to adequate provision of access to the building.
 - Building regulations 2013 Part D– relating to requirements for materials and workmanship
 - Building regulations 2019 Part F – relating to requirements for materials and workmanship
 - Building regulations 2013 Part D– relating to requirements for materials and workmanship
- French doors to be supplied with a copy of CE mark, a Declaration of performance (DoP), technical documentation to support that the product complies with the requirements of EN 14351-1:2006 +A1:2016. Since 2013 it is law for all manufacturers of windows and doors to display a valid CE mark on their products
- French doors must conform to PAS 24:2022 or European Standard EN 1627-1630 classification RC3- Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Requirements and classification.
- French doors must carry a permanent mark or stamp showing details of the

manufacturer, the job number of the window and the date of manufacture. This mark should be placed on the spacer bar between the windows and be visible.

2.3.7 Detailed uPVC composite door specification

The following door specifications and installations must be strictly adhered to by the contractor for the full completion of the works.

All door sets being installed must meet the requirements of the Construction Products Regulation (Council Regulation no. 305/2011). All door sets being installed must carry CE marking and must conform to the requirements of EN 14351-1:2006 (Windows and doors – Product standard, performance characteristics). The stated U-value of the door sets must be certified by an appropriate independent body and have been derived according to IS EN ISO 12567 or IS EN ISO 10077 (Parts 1 and 2). All single-leaf door sets being installed must have been tested to and meet requirements in PAS 24: 2016 (Enhanced security performance requirements for doorsets and windows in the UK. Doorsets and windows intended to offer a level of security suitable for dwellings and other buildings exposed to comparable risk). Contractors must be competent to complete the installation and must complete the work in accordance with British Standard document Code of practice for the survey and installation of windows and external doorsets (BS 8213-4:2016)

and the manufacturer's guidelines as a minimum requirement. All to the approval of South Dublin County Council engineers on completion.

- Composite Door U Value of $< 1.0W/m^2K$ – 1 square grained GRP composite front door, double rebated, square glass panel with Glass area (including side glazed panel if applicable) to be a maximum of 20% of the door area and varnished red deal timber half saddle threshold to finish to existing floor. Choice of 4 colours for new front door - to be confirmed by tenant. Frame and door must match colour.
- Composite Door slab – rebated 68mm in thickness with grained fibreglass outer skin, steel reinforced slab, 4 hinged, compression seals, low-e argon stippolyte square glass glazing, all door hardware to be chrome (door handle, house numbers, letter box, rain deflector) (lever/lever lock or split spindle lock to be confirmed by tenant), chrome door spy viewer, chrome letter box.
- uPVC Frame – minimum 5 chamber frame reinforced with heavy gauge steel colour to match door slab, compression seals, low extra strong aluminium threshold (15mm max height and with chamfered edges and surrounds).
- Door security – 3-star thumb turn euro cylinder lock with 10-point locking system consisting of 4 roller cams, 2 linear bolts, 2 hooks, a thumb latch and 2 deadbolts. All to be PAS 23/24 approved and Secured by Design,
- Door Handle – Chrome with stainless screws, Choice of Lever lever or lever paddle (split spindle lock) with thumb turn barrel all to PAS24.
- All Door hardware to be Chrome
- All glazing to be low-e, argon, clear/stippolyte toughened triple glazed units with warm edge spacer bar. U Value of all glazing to be $< 1.0W/m^2K$.
- Warranty - 10-year warranty to cover frame and door slab structural integrity and warranty against cracking, peeling, blistering and discolouration. All other

parts including handles, gears, hinges, vents are guaranteed for one year from date of installation. Should any part be deemed to be defective due to faulty materials or workmanship during that period a replacement part will be provided by the company. There will be no callout charge during the first year.

- Airtightness tape pretreatment surface primer.
- Airtightness tape applied to clean surface internally to concrete block of reveal. Certified air permeability to ift, MO-01/1:2007-01, Abs. 5. Up to 1000 Pa. Pre installation Airtightness tape ([Pro Clima Contega Solido SL-D](#) or similar product).
- Polyurethane airtightness foam applied to clean surface internally and externally around frame to ope/cavity. The installer should ensure that the foam fills the entire gap from frame to reveal.

Certified air permeability: $\alpha < 0,1 \text{ m}^3$ to EN 12114:2000. Airtightness foam to be applied to underside of internal window board at cavity side. PU airtightness foam to be CE marked. To be applied as per manufacturers recommendations.

- Sealant – silicone sealant to be mould resistant, flexible, weatherproof, UV resistant and colour coded to frame colour with a maximum acceptable application of sealant of a 6mm sealant joint depth up to 12mm width. To be applied as per manufacturers recommendations.
- Where reveals have been chipped back to during the removal/installation process the reveals are to be made good with a sand cement render (externally) or skim coat (internally) and to receive to coats of brilliant white masonry paint.
- All doors must meet the requirement of most recent Building regulations and Technical Guidance Documents:
 - Building regulations 2017 Part B: Fire Safety & Technical Guidance Document B: Fire Safety Volume 2 Dwelling Houses-relating to the use of windows as an alternative means of escape or for rescue purposes
 - Building regulations 2014 Part K- relating to the guarding of windows
 - Building regulations 2022 Part M– relating to adequate provision of access to the building.
 - Building regulations 2013 Part D– relating to requirements for materials and workmanship
 - Building regulations 2019 Part F – relating to requirements for materials and workmanship
 - Building regulations 2013 Part D– relating to requirements for materials and workmanship
- Doors to be supplied with a copy of CE mark, a Declaration of performance (DoP), warranty, technical documentation to support that the product complies with the requirements of EN 14351-1:2006 +A1:2016. Since 2013 it is law for all manufacturers of windows and doors to display a valid CE mark on their products.
- Doors must conform to PAS 24:2022 or European Standard EN 1627-1630 classification RC3- Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Requirements and classification.
- All Doors must carry a permanent mark or stamp showing details of the manufacturer, the job number of the window and the date of manufacture. This mark should be placed on the spacer bar between the windows and be visible.

2.3.8 Detailed uPVC single leaf door specification

The following door specifications and installations must be strictly adhered to by the contractor for the full completion of the works. Door Manufacturer to provide independent accredited test report from an EU notified body conforming to this specification to the project supervisor prior to the selection of any proposed window system. All to the approval of South Dublin County Council engineers on completion.

- uPVC single door half glazed door white in colour (where sidelight is required: left/right half glazed sidelight) and varnished red deal timber half saddle threshold to finish to existing floor.
- Doors must be NSAI Certified or approved equivalent with a U-Value of not more than 1.4 w/m².K. Please refer to the pricing document for lower U Value requirements on doors if re-quired on particular houses. The Door certification must satisfy the SEAI BER requirements.
- Warranty - 10-year warranty to cover frame and door slab structural integrity and warranty against cracking, peeling, blistering and discolouration. All other parts including handles, gears, hinges, vents are guaranteed for one year from date of installation. Should any part be deemed to be defective due to faulty materials or workmanship during that period a replacement part will be provided by the company. There will be no callout charge during the first year.
- 70mm thermal efficient multi chamber uPVC frame. welded joints; lead free; The material content of the PVCu material should be made of not more than 60% recycled PVCu material with the visible surfaces being made of 100% virgin material.
- Double glazed 28mm toughened energy saving safety laminated glass. Low-e, Argon filled, warm edge spacer bar glass. The glass area is to be a minimum of 20% of the door area and a maximum of 30% of the door area. internal bead to glazing.
- Multipoint locking system.
- Chrome door handles with stainless screws.
- 3 Star anti-snap, pick and drill cylinder.
- Doors to have low extra strong thresholds (15mm max height and with chamfered edges and surrounds; Technical Guidance document M compliant).
- Drawn from a profile with a minimum 100mm showing face with a tolerance of + 0.2mm.
- Airtightness tape pretreatment surface primer
- Airtightness tape applied to clean surface internally to concrete block of reveal. Certified air permeability to ift, MO-01/1:2007-01, Abs. 5.
- Up to 1000 Pa. Pre installation Airtightness tape (Pro Clima Contega Solido SL-D or similar product).
- Polyurethane airtightness foam applied to clean surface internally and externally around frame to ope/cavity. Certified air permeability: $\alpha < 0,1 \text{ m}^3$ to EN 12114:2000. Airtightness foam to be applied to underside of internal window board at cavity side. PU airtightness foam to be CE marked. To be applied as per manufacturers recommendations.

- Sealant – silicone sealant to be mould resistant, flexible, weatherproof, UV resistant and colour coded to frame colour with a maximum acceptable application of sealant of a 6mm sealant joint depth up to 12mm width. To be applied as per manufacturers recommendations.
- Where reveals have been chipped back to during the removal/installation process the reveals are to be made good with a sand cement render and to receive to coats of brilliant white masonry paint.
- All doors must meet the requirement of most recent Building regulations and Technical Guidance Documents:
 - Building regulations 2017 Part B: Fire Safety & Technical Guidance Document B: Fire Safety Volume 2 Dwelling Houses-relating to the use of windows as an alternative means of escape or for rescue purposes
 - Building regulations 2014 Part K- relating to the guarding of windows
 - Building regulations 2022 Part M– relating to adequate provision of access to the building.
 - Building regulations 2013 Part D– relating to requirements for materials and workmanship
 - Building regulations 2019 Part F – relating to requirements for materials and workmanship
- Doors to be supplied with a copy of CE mark, a Declaration of performance (DoP), technical documentation to support that the product complies with the requirements of EN 14351-1:2006 +A1:2016. Since 2013 it is law for all manufacturers of windows and doors to display a valid CE mark on their products
- Doors must conform to PAS 24:2022 or European Standard EN 1627-1630 classification RC3- Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Requirements and classification.
- All Doors must carry a permanent mark or stamp showing details of the manufacturer, the job number of the window and the date of manufacture. This mark should be placed on the spacer bar between the windows and be visible.

2.4 The Central heating system

This section outlines the works required for to deliver a new space and water heating system to SDCC housing stock.

It is intended for the upgrade of the existing central heating system to an air to water monobloc heat pump system, to include hot water storage cylinder, where required radiator replacement, associated pipework, wiring, controls and ancillaries. See sub sections 2.4.2 – 2.4.6.21 for full details.

Brief overview Per Dwelling:

- Pressure testing of existing pipework.
- Mechanical Power flushing of pipework.
- Capping of gas supply at the meter. (Gas to be maintained where there is a gas cooker in the property)
- Removal & disposal of existing boiler and redundant (or make safe) wiring to

licensed facility.

- Supply and installation of new air source monobloc heat pump (Heat pump size per pricing doc), ground mounted heat pump unit on big feet or wall bracket at low level, cage, wall core, pipe work, AHSP galvanised external trunking for primary pipework, all required valves, fittings, all required wiring from consumer unit for safe operation, controls, boxing in of pipework and insulation to provide heat source for radiator heating and domestic hot water.
- Heat pump cage where priced.
- The installation of the low-pressure hot water (LPHW) flow and return (copper or MLC pipe) from the air source heat pump to the manifolds and cylinder, pipework, insulation, pumps, expansion vessel, stats, valves etc.
- Primary pipework from heat pump to run up outside wall enter new core formed at intermediate/1st floor level, pipework to be fed between floor joists. Contractor should allow for pockets to be cut in plasterboard ceiling and repatching, skimcoat and finished with 2 coats of white emulsion.
- 3rd party slimline cylinder (Stainless or copper) connected to the external heat pump unit.
- Insulate all hot and cold pipework within hot press
- Supply and installation of heat emitters (steel radiators) to retained heating pipework or new pipework (including required pipework to tie into existing pipework, lagging insulation, pumps, expansion vessel, fill loop, stats, valves etc.)
- New ½ inch copper feed from cold water storage tank supply located in the attic to provide mains water supply for heating system. Including all required fittings & valves.
- Heating system pressure gauge & Filling loop with double check valves and isolation valves (filling loop to be removed from mains supply and left in hotpress once system is filled).
- Wall mounted programable central controller to be installed in hotpress with password.
- Supply & installation of one wall mounted dial thermostat with neon indicator to control heating zone to hallway (or suitable location).
- All electrical wiring, trunking & protective devices required for the full operation of the heat pump. Including new wiring to immersion from consumer unit.
- Din rail energy monitor to heat pump power supply.
- Earthing and bonding of system.
- Heat pump installation and commissioning must be signed off by the heat pump manufacturer. Commissioning to include for balancing of system.
- The designer &/or commissioner of the heat pump system must be able to sign off on the flow temperatures for the heat pump as outlined in the designer signs off as part of this tender documentation.
- Thermal image survey of heat emitters operating at full temperature to be supplied with Operation & Maintenance files.
- Operation & Maintenance files.
- Training to tenants and laminated instructions.

The Contractor shall make allowance for automatic air vents at all high points in the heating system.

Quarter turn isolating valves must be installed by the Contractor to allow all items of plant and equipment to be isolated for easy removal. Especially to the primary flow and return located at rear of the heat pump.

All new pipework and valves to be labelled accordingly to identify purpose and direction.

The mechanical contractor to allow for pipework drops and offsets from the new pipework runs.

Contractor must allow for all costs associated with making safe of redundant heating system wiring and the new wiring from the heat pump to the consumer unit. (Including 10sq.mm earth to hot press & external heat pump)

The Contractor is to provide heating for the duration of time that the heating system is not functioning to provide space heating.

The appointed contractor shall carry out the installation of the new central heating system in the following processes:

1. The contractor will pressure test the existing pipework with the intention of retaining.
2. If the pipework passes pressure test, a power flush will be carried out prior to installation of new heating system. If the pipework fails or pipework is insufficient section/half/or full re-pipe may be required, to be decided on site with SDCC engineer.
3. Subject to the decision on the pipework the contractor will proceed with installation of new central heating system.

This specification covers the requirements and conditions for the supply and installation of air to water heat pump central heating systems to occupied & unoccupied council dwellings as outlined in the pricing document. It should be read and construed together with drawings indicating layout of emitters and design of heating systems generally. Samples of all materials must be supplied for approval by South Dublin County Council before any installation work commences. The contractor should familiarise themselves with the house sketches to plan how they intend to execute the works. It is recommended that they organise a site visit at tender stage. The Contractor shall make no assumptions. Variations as a result of assumptions will not be paid. Requests for Information (RFI's) must be issued to the engineer.

Contractor's Competence

Central heating Heat pump systems must be installed by suitably qualified and competent personnel. Personnel nominated to supervise and inspect the works, and to sign off the Declaration of Works must be competent in the different aspects of the works. This includes design, sizing and installation of the whole heat pump system. The minimum qualification and training requirements that must be met by personnel

nominated to sign off the Declaration of Works for grant purposes are:

- Register Gas installer (RGI) certified.
- Fetac/QQI Level 6 Advanced Craft in Plumbing, including a module on minor electrical works, or equivalent.
- Certificate of competence from the specific manufacturer of the heat pumps installed, based on an adequate training programme.
- Fetac/QQI Level 6 Heat Pump Systems (Course Code C30263) and supplemental Domestic Heat Pump Installation (Code 700606) or equivalent.

NOTE: A Registered Electrical Contractor (REC) is required to supervise and sign off the electrical installation of a heat pump system, in accordance with

the definition of “Controlled Works and Restricted Works” by the CRU. A copy of the Safe Electric completion certificate must be left with the homeowner and available for inspection.

Standards, Codes & Authorities

All work shall meet all the Requirements of National and Local Statutory Authorities and shall be in accordance with, and not limited to, the following:

1. Current Irish Building Regulations and Amendments.
2. Gas Networks Ireland Regulations.
3. All Applicable Irish, British and European Standards.
4. All Health and Safety Authority Requirements.
5. All Local Council Rules and Regulations.
6. CIBSE - Chartered Institution of Building Services Engineers -
7. Safety, Health and Welfare at Work Act, (Construction) 2013.
8. Current Safety, Health and Welfare at Work Act, (General Applications) Regulations.
9. .I.S.813:2014 Domestic Gas Installations
10. I.S.238 Copper Tubes
- 11.11 B.S. 7291, B.S.2871, B.S. 5449
12. B.S. E.N. 14336 Heating Systems in Buildings
13. GPC 301 Controls for domestic heating & hot water
14. SEAI heat pump installation guidelines
15. Building Regulations Technical Guidance Document D Materials and Workmanship

2.4.1 Pressure test of existing heating pipework

The existing heating pipework is to be pressure tested to establish if the existing pipework can be retained. The existing wet system consists of radiators. The contractor is required to carry out a Hydrostatic heating pressure system test. Pressure test to be carried out at 3 bar for 2 hours, to be witnessed by SDCC engineer. Safety valve to be isolated from the system during the pressure test. A Pressure Test Sign off sheet is to be completed by the contractor with time stamped photograph of the test in action, to be

supplied with O&M files. Should the pressure drop, the mechanical contractor should check for leaks on the system, if no leaks are found the test is to be reperformed to the same test conditions. On second retest if the pressure subsequently drops again SDCC engineer to be notified. Should the system not drop in pressure during the first test and the heating pipework is deemed adequate, the heating pipework will be retained and power flushed prior to installation of new radiators and heating system.

2.4.2 Re-pipe of heating pipework

Where the heating pipework has failed the pressure test or the existing heating pipework is deemed not suitable by SDCC Mechanical inspectors, the contractor is to complete a full re-pipe of the heating system.

Works to include removal of all redundant pipework. Copper pipework and solder fittings to be installed (copper press fittings can be used with SDCC approval). Pipework to be in ¾" copper pipe to the second last radiator. On completion of replacement pipework, mechanical contractor is to connect all pipework to the cylinder and radiators and flush system prior to filling. Contractor to commission system to manufacturers specification, to include inhibitor etc. All pipework within attic, floors and hotpress to be fixed and lagged to building standards & technical guidance documents.

All heating pipework on the surface and exposed to be copper. All pipework horizontally and vertically running pipework to be concealed with specific heating pipe concealment such as "FALCON PIPE TRUNKING Systems" or similar product or boxed in using battens and 12mm plywood with caulk to wall edges and timber filler to timber joints. Skirting board applied to all ground level and Classic C shape coving to ceiling level of box in. Box in, skirting & coving to be finished with 2 coats of white emulsion paint. Alternatively white trunking can be used.

2.4.3 Re-pipe of heating pipework to downstairs/extension

Where the heating pipework needs to be replaced downstairs due to sizing of pipework/failure, the replacement pipework to the downstairs/extension should be installed in same approach to a full house re-pipe.

2.4.4 Removal of existing boiler and heating controls

Where the existing gas boiler is to be replaced with an air to water heat pump the contractor is to remove the existing gas boiler, pipework to the boiler and the existing heating controls with associated wiring. All redundant electrical wiring to the existing heating system to be made safe or removed where required. All water within the boiler and pipework to be drained. Gas boiler and pipework to and from the boiler to be disposed to a licensed waste facility. The pipework to be cut back to within the ceiling and capped. Ceiling to be patched with plasterboard, skimmed, new c-coving to tie into existing, finished with 2 coats of white ceiling paint. Heating controls and wiring including trunking to be removed, disposed to licensed facility and surfaces of existing located heating equipment to be made good with 2 coats of white emulsion paint.

2.4.5 Removal of existing cylinder and redundant pipework

The existing cylinder, redundant pipework and heating controls including wiring are to be drained and disposed of to a licensed waste facility. All wiring to be made safe by a registered electrician. Quantities as per pricing document.

2.4.6 Power flush of retained heating pipework

Where the existing heating pipework has passed the pressure test and being retained (including any alterations) the contractor is to mechanically powerflush the pipework as per Appendix B - SDCC Mechanical Specification for Energy Retrofit.

2.4.7 Adaptions of retained heating pipework

The contractor is to supply a rate for all works required to adapt the existing heating pipework throughout the property to the new heating system. Such works can include but not limited to adapting existing flow and return pipework to new radiators, adapting pipework within hotpress etc.

2.4.8 Central heating system components & design parameters

System and install to include:

- Inverter driven air to water monobloc heat pump
- Low energy circulating pump - minimum 9m head pump with a flow rate of 1.3m³
- IP66 external isolator switch black/grey in colour
- New wiring & safety devices for safe operation of system– all necessary wiring to heat pump system including immersion group to cylinder & 10sq.mm earth to hot press & external heat pump.
- A calibrated and suitably certified din rail electric energy meter to the heat pump power supply or alternative energy meter equipped with data logger.
- Coring of wall for pipework including sleeve
- ASHP grey anti rust treated (powder coated or galvanised) trunking with lid (average run 2.8m per property)– to include for all fixings, straight connectors, bends and wall cover. Trunking to be high grade fade resistant uPVC. Galvanised/powder coated mechanical protection to external pipework. Elbows and trunking blank ends to be used – Galvanised “Unitrunk” trunking or similar product.
- 32mm condensation pipe, manufactured bends and brackets discharged to finish 100mm above nearest gully or newly installed soakaway. average run 3m per property)
- Floor mounting frame and anchor bolts (2no. 600mm rubber floor brackets flexi foot or where no option to wall mount galvanised brackets with rubber vibration mounts or similar pending agreement with site engineer). Some locations may not suit floor mounting therefore wall mounted on galvanised brackets at low level will be required.
- All associated heat pump pipework to hotpress cylinder & ancillaries.

- UV resistant insulation mechanically protection to all external insulated pipework (Armaflex tuff coat or similar)
- Frost protection – glycol
- Inhibitor & biocide to system water
- Butterfly valves on flow and return for isolation
- Deaerator & Magnetic filter or Combined deaerator
- Automatic bypass valve
- Unit Y strainer on return flow pipe
- System pressure gauge spring loaded system bypass valve
- Soft close 3 port diverter valve
- Additional 2 port diverter valve (to prevent water hammering)
- Factory insulated copper / stainless steel cylinder with emersion & cylinder stat. (Further clarification of Capacity see section 2.4.4.4 Heat pump compliant indirect cylinder specifics)
- Pressure gauge
- Automatic air vents (where required)
- Isolation and regulating valves, drain taps/ cocks to low points, stop cocks and safety valves
- 2 No. safety valve of approved type including press gauge
- Filler loop & required mains water pipework to hot press
- Expansion vessel (nitrogen-filled vessel)
- Pressure relief valve
- Heat pump controller (located in hotpress)
- Hard wired dial room thermostat with neon indicator mounted on hallway wall and all associated wiring to and from heat pump to consumer unit, hotpress, heat pump controller.
- Heat pump and pipework within hotpress to be bonded
- Cabling to be surfaced mounted in white flatback uPVC trunking with manufactured bends fixed with mechanical fixings. Redundant back boxes to be blanked off with blanking plate.
- Internal surface mounted trunking to be housed in white uPVC pipe trunking such as “FALCON PIPE TRUNKING Systems” or similar product with manufactured bends or where appropriate timber box in.
- Wall mounted Heat emitters (radiators, where required)
- Insulation to hotpress pipework
- 10mm² earth to hot press & external heat pump
- Labelling of all valves and pipework
- Anti tamper switch guard to cover immersion switch
- Galvanised/powder coated heat pump cage

The contractor should include for any additional necessary components/items required for the heat pumps safe and efficient operation and for installation as per heat pump manufacturers requirements and specification. Should an item not be included during

the pricing the contractor will absorb associated costs. It is imperative the contractor reviews their heat pump design prior to pricing.

Note

product data sheets for all items to be submitted during tender stage for approval

Heat pump sizing

Heat pump sizing as per designer installer sign off sheet & pricing document.

Heat pump Design flow & return temperature

The temperature of the water leaving the heat pump system is to be set to 45°C with a return temperature of 40°C. The tender package will contain designer installer sign off sheets which must be adhered to. Any changes in the design temperatures to be agreed with SDCC Engineer.

Central heating design parameters

The air to water central heating system is to be setup as per the design temperatures and designer installer sheets supplied with tender. Heat emitters (radiators) to be sized to meet the room heat loss as per designer installer sheet provided with tender. The heating and hot water service shall be controlled automatically and independently by time and temperature. Heating system to be installed with 2 zones. Zone 1 will cover all space heating. Zone 2 will cover domestic hot water heating. The controls strategy should generally be configured on a DHW priority basis, with the system reverting to space heating once the DHW cylinder setpoint is satisfied. Domestic hot water shall be set to operate at a typical cylinder setpoint of 50°C with a 10°C hysteresis i.e. the heat pump will heat the cylinder to 50°C then allow it to cool to 40°C before switching over the DHW circuit again. The system must be able to operate at temperatures preventing growth of Legionella. The heat pump must be able to supply hot water at 55°C and the supplementary hot water heater shall provide stored hot water at 60°C. The heat pump operation must be automatically interlocked to ensure that it switches off when there is no time or temperature requirement for heating or domestic hot water.

Internal Temperatures

Design values for dry resultant and relative humidity are published in table 1.1 of Guide A, Environmental Design, published by the Chartered Institute of Building Services Engineers (CIBSE). These values will be adopted and are as follows:

- Living areas i.e. – sitting room, dining room, playroom: 18-21°C
- Other areas i.e. – kitchen, hall, toilet, bedrooms: 16-18°C
- Bathrooms (with shower): 22°C.

All new heat pump installations must be set up and commissioned to operate in weather

compensation mode, the weather compensation curve will be as instructed by SDCC or unless specifically stated set for the following defaults:

- Outdoor Temperature = +7 °C ; Heat Pump Heating Flow = 45 °C
- Outdoor Temperature = +20 °C; Heat Pump Heating Flow = 30 °C
- Outdoor Temperature = Any Temperature; Heat Pump Hot Water Storage = 48 °C minimum – under no circumstances shall DHW be set to less than this.
- Thermal Disinfection shall be once weekly and achieve 65 °C in the cylinder for a period of 15 minutes minimum, longer times than this are to be eliminated in order to reduce unnecessary energy usage. This cycle shall not be permitted to occur during peak electricity tariff times.

Radiator sizing

All new or replacement radiators must be sized to meet the room heat loss as per designer installer sign off sheet document and on the new design temperatures stated within the heating design tab of the designer installer sign off form and shall be sized on a maximum adjustment factor of a 20K MWT, mean water temperature difference, (22°C room, 45°C/40°C heat pump Flow & Return) unless heat pump specific requirements result in a lower MWT factor for adjusted radiator sizing as per EN standards and SEAI BER requirements. The appropriate

The pipework circulation circuits must be of a two-pipe configuration with all heat emitter flow rates balanced to provide their correct output and temperature drop. Regardless of which setup is selected all heat pumps shall upon commissioning be limited to generate no more than 50 °C during heating mode at any outdoor condition.

Documentation requirements

- Ecodesign datasheet (max 5 pages)
- Completed Designer/Installer spreadsheet as per template available from the SEAI Contractor Supports Web page, including the DHW and Heat distribution design and specifications (radiator, underfloor sizing, air-to-air)
- Commissioning certificate completed in all relevant parts
- Safe Electric Completion certificate, completed in all relevant parts
- Details of F-Gas Certified Company and sign-off
- Where applicable, documentation of Ground and Water collector design and installation (see point k above)
- User and Installation Manuals

Design and installation of the heat pump system shall be based on the latest version of the following standards, guidance and specifications:

- The applicable National Rules for Electrical Installations
- EPA “Summary Guidance for Compliance with the ODS and F-Gas Regulations” and “Complying with Regulations Controlling Fluorinated Greenhouse Gases

and Ozone Depleting Substances – A Guidance Note for Operators of Equipment Containing F-gases and ODS”

- I.S. EN 15450 Heating Systems in Buildings – Design of Heat Pump Heating Systems
- I.S. EN 12831 Heating Systems in Buildings – Method for calculation of the design heat load
- B.S. EN 12828+A1 Heating systems in buildings. Design for water-based heating systems
- HPAI Heat Pump installation guidelines
- S.R. 50 – 1 Code of Practice for Building Services Part 1: Domestic Plumbing and Heating
- Microgeneration Certification Scheme MCS 021 Heat emitter guide for domestic heat pumps and “Heat Emitter supplement to the Domestic Heating Design Guide” by the Institute of Domestic Heating and Environmental Engineers (IDHEE)
- ‘Heating and Domestic Hot Water Systems for Dwellings – Achieving Compliance with Part L’, Section 8 from DHPLG
- SEAI DEAP Heat Pump Methodology
- I.S. EN 378-1 and I.S. EN 378-3: Refrigerating systems and heat pumps – Safety and environmental requirements -Part1: Basic requirements, definitions, classification and selection criteria and -Part3: Installation site and personal protection
- Manufacturer’s installation instructions for the specific Heat Pump model(s) and other parts of the system installed
- CIBSE – Domestic Heating Design Guide
- Microgeneration Certification Scheme (MCS) MIS 3005 “Requirements for MCS Contractors undertaking the supply, design, installation, set to work, commissioning and handover of microgeneration heat pump systems”
- Vented copper hot water storage vessels should comply with the heat loss and heat exchanger requirements of BS 1566-1:2000 ‘Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure. Chlorinated poly (vinyl chloride) (PVC-C). Specification for pipes, fittings and the system’ or BS 3198 ‘Specification for copper hot water storage combination units for domestic purposes’
- Vented cylinders in materials other than copper should comply with the heat loss and heat exchanger requirements of BS 1566
- Unvented hot water storage system products should:
 - comply with IS. EN. 12897 ‘Water supply. Specification for indirectly heated unvented (closed) storage water heaters’; or
 - be certified by the Irish Agrément Board; or
 - be certified by another accredited body as complying with Building Regulations.
- Unvented systems should not be used with gravity circulation

2.4.9 Air to water monobloc heat pump technical requirements

- Air to water monobloc heat pump Firebird or equivalent manufacturer (KwH output as per pricing doc and designer sign off). Designed and constructed in accordance with the Building Regulations, Irish Standards, the EU Energy Performance of Buildings Directive (EPBD) and the Building Energy Rating scheme (BER)
- Heat pump to be registered on the HARP data base. The Home Heating Appliance Register of Performance (HARP) database is a product efficiency database for home heating appliances used in Ireland.
- Fully comply with the EU Energy Label and Ecodesign regulations i.e. Commission Regulation (EU) No 813/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters.
- Provide the data required for the Domestic BER assessment (Ecodesign datasheets) for approval prior to fitting. These must be based on ErP / Eco Design test data as per EU commission regulations [EU No. 811/2013](#) and [EU No. 812/2013](#) - EN14511, EN14825 (Space Heating) and EN16147 (DHW) testing standards. Any unit not having the above two sets of required test data are not approved for installation and shall not be used. All test data shall be for the climatic region Ireland (average climate) is located in as per EN standard.
- Applied standards EN14511 & EN14825 (Space Heating) for climate condition average & temperature application of medium temperature 55°C, a seasonal space heating energy efficiency $\eta_s \geq 130\%$ and a Declared coefficient of performance (COP) for part load at outdoor temperature $T_j = +7^\circ$ of minimum 4.5KW.
- Applied standards EN16147 (DHW) with a water heating energy efficiency of $\eta_{wh} \geq 100\%$.
- Energy efficiency water 35degC A+++ / 55degC A++.
- Heat pump should be inverter driven capable of meeting 100% of space heating requirements (ie no requirement for electric immersion heater backup) and 80% of the domestic Hot water demand as per DEAP methodology estimates with sizing of heat pump based on an external temperature of -3°C .
- Low GWP refrigerant conforming to EU regulation (517/2014).
- The capacity of the unit is outlined in the pricing document for each particular house type in KWs. The Main contractor must supply an ErP certificate for the proposed unit, where this figure is shown under medium temperature application at average climatic conditions. All to be approved by site engineer prior to installation.
- Be listed on the SEAI Triple E register.
- Minimum of a 5-year warranty on parts and labour.
- There should be automatic operation via weather compensation for space

heating temperatures.

- The unit must be capable of recording and storing operation performance via cable, SD card or dongle to allow for operating data for access and analysis by SDCC staff. The heat pump must not be connected to a tenants wifi or subscription service.

must be able to:

- Record Room Temperature within each zone independently and simultaneously on a permanent basis.
 - Record Hot water Temperature on a permanent basis.
 - Records Energy Usage/Energy Produced on a permanent basis.
 - Records COP on a permanent basis.
 - Wi – Fi must not be required to carry out any of the above functions.
 - A council representative must be able to go to the heat pump controller and gather all the above information.
- The heat pump main controller must be able to be locked so tenants/householders are not able to interfere with the heat pump controls/settings. The only controls that the tenant/householder must be able to freely adjust is the hard-wired thermostats present in each of the space heating zones.
- The heat pump system shall operate at 230 Volts 50 Hz single phase. It shall be suitable for operation with, and connection to a sealed system.
- Unit should be capable of holding its settings (parameters) for a minimum of 3 months should power be removed.
- There should be a backup immersion (minimum 3kW) should be present (DHW only).
- The heat pump shall be capable of carrying out a legionella thermal disinfection of the hot water cylinder weekly, maintaining the temperature in the cylinder at least 60°C for a maximum of 60 minutes.
- Cylinder Thermostat supplied by Heat pump Manufacturer or 3rd party with Internal Unit.
- Noise levels at the nearest property boundary must not exceed 43 dB(A)
- Heat pump to comprise of circulating pump.
- Return and flow pipes to be fitted with Butterfly valves close to unit.
- Air to water heat pump to have cooling system isolated via dip switch or electronically with access restricted via pass code.
- Heat pump is to be freestanding floor mounted. The unit should be installed on 2no. 600mm rubber mounts/flexi feet with Galvanised steel mesh cage to be bolted to ground and wall covering the entire outdoor heat pump unit. Distance from unit to cage to be as per manufacturer specifications.

12mm mesh grill with spacings between each bar not to be more than 10mm. Frame of unit to be built of 75x75mmx 6mm Galvanised Angle iron detail. All to approval of site engineer.

Internal locked access must be provided for servicing of heat pump unit.

Isolation switch to be outside steel cage for ease of access. Built-in drip tray with 32mm condensate pipe fitted to gully drain. Condensate soakaway (Mac-apline or similar) to be installed if no gully is within suitable distance.

Where the heat pump cannot be positioned on the ground SDCC engineer should be notified to discuss wall mounting the unit. If permission is granted to wall mount unit it should be installed level on galvanised/powder coated cantilever arms including anti-vibration mounts

- Black/grey Isolation switch to be IP67 isolator located next to the unit. It shall not be mounted either directly above or behind the appliance.
- The distance between the outdoor unit and all adjacent surfaces/structures must be as per manufacturer's requirements.
- The Contractor must also ensure that adequate space is provided for the removal of all access panels to allow proper maintenance.
- Heat pump and cage to be bonded.
- The Heat pump outdoor unit's casing should be electrostatically powder coated and the evaporator should be 'blue fin coated' giving the evaporator extra protection against corrosion.

Note heat pump must be earthed with 10sq.mm earth to consumer unit.

2.4.10 Indirect hot water storage cylinder technical requirements

- Factory insulated indirect slimline Cylinder size based on guidelines from BS6700
 - 1/2/3 Bed with 1-bathroom 150L cylinder minimum
 - 4 Bed with 1-bathroom 180L cylinder minimum
- Cylinder standing heat loss does not exceed $1.28 \times (0.2 + 0.051 V^{2/3})$ kWh per 24 hours. All cylinders should be labelled with the standing heat loss in kWh/24 hours. Where V is the nominal storage capacity in litres.
Eg. $1.28 \times (0.2 + 0.051 (150^{2/3})) =$
 $1.28 \times (0.2 + 0.051 (28.23))$
 $1.28 \times 1.64 = 2.09 \text{ kWh per 24 hour}$
**Note standing heat loss to be labelled on cylinder.
- cylinder complying with I.S. 161: 1975 using the method specified in Annex B of BS 1566-1:2002+A1:2011, standing heat losses are restricted to 0.8 W/litre
- Minimum energy rating of C.
- Cylinder dimensions should not exceed 1500mm high x 500mm in diameter.
- Copper/stainless steel cylinder to be vented to attic cold water storage tank.
- Copper/stainless steel cylinder to be sat on 12mm ply square base.
- Copper/stainless steel cylinder to include cylinder stat and emersion element.
- Warranties - Copper cylinder 2-year warranty. Stainless steel 10-year warranty.

- All metal pipes are bonded together via 10mm² ground wire with ground coupling.
- The unit must be heat pump compatible to include a heat exchanger for maximum hot water efficiency.
- Tundish to be installed adjacent to DHW cylinder.
- The above cylinder to come complete with a 3-port diverting valve controlled by the heat pump controls.

Note cylinder must be fitted with 10sq.mm earth to consumer unit.

2.4.11 Anti-freeze protection

Glycol installed as per manufacturers specification and concentration to be measured with refractometer, in addition inhibitor and biocide to be added to system. Nontoxic formulations only with written statement from manufacturers/suppliers stating as such. All products to be compatible with all materials commonly found in heat pump systems.

2.4.12 Valves and stopcocks

Isolation and regulating valves, drain cocks, stop cocks and safety valves, shall be installed in the positions noted in this specification, and in locations as required to comply with good practice guidelines.

Isolation valves to be fitted on the primary pipe work at the outdoor unit to allow for removal/isolation of unit.

Drain cocks shall be provided on all low points of the system and as noted in this specification. Drain cocks shall be installed complete with hose union and blank cap secured to the body of the valve and must be in easily accessible locations to allow maintenance.

2.4.13 Sealed system and expansion vessel

Where the existing system is a sealed type, the Contractor shall supply and install a filling loop and expansion vessel adjacent to the heat pump. The filling loop shall be a flexible stainless-steel hose with union connections at each end and incorporate a 0 - 4 bar pressure gauge, dual non-return valves and quarter-turn isolation valves. Any fill line fed from a boosted supply or any supply with inlet pressure greater than 1.3 Bar shall be fitted with a pressure reducing valve.

- A nitrogen-filled diaphragm type vessel to B.S 4817 Part 1 will be installed to accommodate the increase in water volume at system rise in temperature.
- Connecting pipework will not be less than 22mm, no valve installed.
- Heating expansion must be located within the hot press, with a capacity suitable to the system.
- Capacity of vessel will accommodate increase in volume when system is heated.
- Vessel will be positioned to provide access for maintenance and

- charge pressure testing.
- Vessel to be accurately sized for system operation as per CIBSE Domestic Heating Guide.

2.4.14 Safety valve

The heating safety valve discharge pipe shall be of 15mm copper tube, and the discharge should terminate at low level to a visible position outside the building facing downwards. The discharge pipe from the safety valve should incorporate an inline tundish to allow visual indication and observation of the safety valve operation. The tundish must always be fitted inside the house and never externally or in areas at risk of freezing.

The heating system to be fitted with a heating safety valve, either pressure only or temperature and pressure type.

The DHW system to be fitted with a temperature and pressure combined safety valve on the cylinder.

All pressurised cold-water supplies shall have a pressure relief valve fitted on the inlet.

2.4.15 Automatic bypass

An automatic bypass valve shall be fitted between the primary flow and return pipework (or as required by heat manufacture) and set to give the minimum flow rate required for the correct operation of the heat pump when all other circuits are closed. The bypass shall be fitted in an accessible position for setting and maintenance purposes.

Alternatively, an approved low loss header should be installed, complete with drain-off valve and air vent, to guarantee adequate flow through the heat pump.

2.4.16 Magnetic filtration Unit

A magnetic filter unit shall be installed on the primary heat pump circulation pipework in a convenient position on the return pipework, near the heat pump, and in accordance with manufacturer's instructions. The unit must be easily accessible for maintenance. The unit must also incorporate integral isolation valves on the inlet and outlet connections.

Deaerator & Magnetic filter or Combined deaerator and dirt separator. (combined deaerator to incorporate magnet to separate ferrous materials). To guarantee optimal operation the maximum speed entering the device should be $\leq 1.3\text{m/s}$ or 9m integrated head pump.

2.4.17 Air vents

Automatic air vents must be installed on all separate sections of high-level pipework. Each vent must be complete with an isolation valve. All vents

and valves must be adequately supported. They must have a gradual rise and be accessible for maintenance purposes.

2.4.18 Electric energy meter

A din rail mounted two pole energy meter is to be installed in the consumer unit/sub consumer unit to monitor the energy consumption of the heat pump. The energy monitor has to be rated for the full load current of the heat pump and any other ancillary equipment that is part of the heat pump installation

2.4.19 Labelling and identification

Labelling and identification must be completed in accordance with the following requirements. The Contractor must label all isolation and control valves with a numbered label. A printed schedule of all valves, and their function must be fixed, in a prominent position, to the wall or door of the heat pump compartment. The schedule must be enclosed in a protective plastic cover and a copy also included in the submission of the recorded documentation.

The labelling must also include the relevant Irish and European statutory equipment labelling requirements such as the ErP labels on heat pump, cylinders, etc. ErP system labels and information shall be supplied fully completed by the contractor for each individual installation.

Each heat pump shall have an identification sticker affixed to the front casing of the indoor and outdoor unit stating the installation date and name of contractor.

As part of the performance specification and performance-based equipment schedules reference should be made to the requirement that equipment proposed is either Triple E Registered or satisfies the same criteria required for Triple E Registration and evidence of same should be provided prior to installation stage to verify same.

2.4.20 Immersion switch anti tamper cover / guard

The contractor shall fit a plastic Household Switch guard cover to immersion switch located in hotpress. This is to prevent accidental switch off the immersion switch which could result in scheduled legionella cycle not completing.

2.4.21 Heat emitters - radiators

- Radiators must be sized by the contractor to meet the minimum wattage requirement and the required ΔT Design for heat output per room as outlined in the Designer sign of document. Contractor is responsible to ensure that the heat output meets the heat loss for each room. The supplied SEAI designer installer sheets should be used as a guide, but ultimate responsibility lies with the heat pump designer.
- Radiators to be white, steel roll top complete with mounting brackets lock shield valves, with a lock-shield valve at both ends, 2-way thermostatic

radiator valves (TRV) to be all habitable rooms. Habitable rooms include bedrooms.

No TRV required to bathroom or hallway or where room stat is located.

- Stelrad or equally approved
- Each radiator shall be a set height locating the bottom of the radiator between 150mm and 175mm from the finished floor level. All pipework above ground to radiators and fixtures shall be either fully vertical or horizontal and in line with the intended position of the appliance. When radiators are to be proposed underneath windows, the top of the radiator must be a minimum of 50mm lower than the underside of the window board.
- Where pipework is boxed in underneath radiators, a gap of 75mm must be maintained underneath the radiator to allow for air circulation around the radiator.
- The lowest radiator, or one of the radiators fitted on the ground floor shall be fitted with a drain tail 15mm min outlet or similar suitably located to allow for flushing and future draining of the system.
- Exact positioning to be agreed on site with SDCC engineer. Where heat emitter locations are to be relocated contractor to inform SDCC engineer prior to carry out the works.

Additional Radiator

There may be a requirement for an additional radiator in order to meet the required heat emitter output. The contractor is to supply a rate for the supply and installation of a radiator (Emitter output as per heat pump designer) contractor to include for fittings, TRV, lockshield, brackets & approx. 3m of feed & return copper pipework. Contractor should allow for lifting of floors and / or opening and repatch of ceilings.

Replacement of section feed and return pipework to radiator(s)

There may be a requirement to replace a section of feed and return pipework to a radiator(s) in circumstances where the pipework is inadequate to provide the correct supply to a radiator. An example can be where a number of radiators are supplied with in ½” copper. The ½” inch copper will need to be replaced with ¾” inch copper pipe to the second last radiator and connected to the ½” feed to the last radiator.

The contractor is to provide a rate that will cover both the supply and return pipework per linear metre. Pipe sizing will vary from ¾” and ½” copper. This rate will be applied for both pipe sizes. Rate to include for all fittings, soldering, brackets & where required pipe trunking.

Contractor should allow

for lifting of floors and / or opening and repatch of ceilings, however kept to a minimum.

Radiator circuit flow and return pipework must be a minimum of 22mm diameter to the second last radiator to include pipe drops to accommodate ground floor radiators.

Where pipework existing pipework is not sufficient to achieve the required flow rate this must be brought to the attention to SDCC engineer.

2.4.22 Wall mounted central programmer

- Programmer 3 Zone – 7 Day – for Heating & Hot Water and independent time platform as part of heat pump control system. There must be independent time and temperature control for each zone.
- 3 channel 7-day programmer
- Central Programmer to be located in hotpress with temperature reading to be taken from wall stat located in hallway.
- DHW to be prioritized via built-in factory mounted 3- way valve.
- Control must include DHW scheduling, with automatic disinfection mode and an auto adaptive weather compensated heating curve.
- Heating controls by heat pump manufacturer and provide energy saving auto adaptive control.

2.4.23 Wall mounted room stat

- Roomstat to be Mains Operated Non Programmable Thermostat 1 channel wired, 5-30°C Temperature Range, Analogue Dial Display or rotary dial with digital display and on/off control modes. EPH or similar.
- Room stat to be located in the downstairs hallway, wall mounted a minimum of 1.5 away from any radiator and positioned out of direct sunlight with cable surface mounted inside white square uPVC trunking mechanically fixed. It is the contractor's responsibility to ensure appropriate location. Contractor will have to move stat if positioned in unsuitable location.
- Room stat to be connected to central programmer to set desired temperature for house.

2.4.24 Heat pump cage

Contractor is to supply and fit galvanised cage to surround air to water heat pump, bolted to ground with rawlbolts.

- Rust resistant hot-dipped galvanised 1.2mm steel to BS EN ISO 1461 finished in Electrostatic powder coating anthracite grey in colour
- 5 Year Manufacturers Corrosion Warranty
- Compliant with CEN/TR 13387:2004 (E) for finger protection (Minimum 5 mm for rigid openings/7mm for flexible materials/mesh - Maximum 12mm)
- Stainless steel adjustable foot pack up to 100mm clearance
- Access hatches in side panels allow power switches to be securely

- fitted within the boundary
- Hinged isolator access doors
- Easy slide-in side panels for ease of access to service heat pump
- Fixing bolts Stainless steel AISI304
- Cage to be to be earthed bonded 10mm² ground wire with ground coupling.

Note Heat pump cage to be bonded & grounded. Heat pump cage to not prevent access to elements requiring access for servicing such as AJ's or gullies. All to approval of site engineer.

2.4.25 Condensate soakaway

Where there is no gully to terminate condensate from heat pump the contractor is to construct a soakaway. The soakaway should be installed a minimum of 600mm from the dwelling wall. Contractor should allow for creating opening through concrete footpath (400mm deep x 200mm wide), excavate subsoil, install a minimum of 50mm of 10mm chippings, install a constructed a soakaway chamber constructed of 4" perforated waving pipe, press fit square hopper with grill and stop end, pipe to be inserted and surrounded with a minimum of 50mm of 10mm open aggregate. Footpath or surface to be made good to match surrounding exiting surface. The soakaway should not cause a trip hazard. Where soakaway will cause trip hazard condensate pipe to be laid below ground level and enter soakaway to side of perforated pipe, with no inlet opening to be created at stop end.

2.4.26 Lagging of existing cold water storage tank and pipework

Contractor is to supply a rate for the lagging of cold-water storage tank and pipework to and from the tank within the attic space. Lagging jacket to suit cold water storage tank of up to 340L tank. Lagging jacket to be securely fixed with heavy duty tape to cover all sides and top. Lagging jacket mineral wool insulation to have minimum nominal thickness of 50mm and an outer PVC layer. To meet requirements of Water By-law 30 and BS 7181: 1989.

All pipework to and from the cold water storage tank to be lagged with closed cell PE insulation EN 14313:2009+A1:2013. Pipework to be labelled on completion.

2.4.27 Replace cold water storage tank & tank stand

Contractor is to supply and fit a robust black polyethylene cold water storage attic tank with Part 2 ball valve with float, ball valve backing plate, 22mm compression tank connector, 15mm x ½" angled service valve, plastic support and rubber sealing washer, tank lid, insulation jacket and drip tray. Drip tray to be piped through soffit to eaves for run off.

The cold water storage tank should have an actual capacity of not less than 212 litres in the case of a dwelling containing up to three bedrooms and an actual capacity of not less than 340 litres in the case of a dwelling containing four or more bedrooms. The cistern should be properly covered but not airtight, accessible for cleaning and

replacement, and fitted with an overflow pipe so located as to discharge in a manner that will give ready warning of the occurrence of overflow without causing any nuisance or any dampness in the dwelling.

Tank Stand

The water cistern in a cut timber roof should be supported by a framework directly over and off load bearing walls. Alternatively the framework can transfer the cistern loads to a supporting wall or structure. The design of the framework will depend on the size of the cistern and the distance it has to span.

The water cistern in a truss timber roof should be where possible the water cistern should be placed centrally within the roof void and be supported by over a minimum of four trusses. Cistern supports of a system of spreader beams and bearers should be provided to transfer the cistern load to node points of the supporting rafters supported. These provisions are adequate for the majority of standard conditions. The spreader beams should be located as near to the node points as possible water tanks with a nominal capacity of up to 270 litres should be spread over four trusses. Support for larger capacity tanks requires special design. Where possible the water cistern should be placed centrally within the roof void and be supported by over a minimum of four trusses. cistern supports should be provided to transfer the cistern load to node points of the supporting rafters. The minimum strength class of timbers should be c16.

2.4.28 Lagging of existing cold water storage tank & pipework

Contractor is to provide a rate for the supply and installation of a lagging jacket to the cold water storage tank up to a maximum of 340l and lagging to pipework within the attic space. Flexible polyethylene pipe insulation having a minimum wall thickness of 22mm. Pipes, all joints fully sealed with a suitable insulating tape. Insulation should be neatly fitted with formed mitred joints at elbows and tees and should cover all valves and fittings.

2.4.29 Installation of new heating system

The appointed contractor is to:

- Carry out Pressure test & flushing of existing heating pipework as per section 2.3.2. Pending outcome of pressure test, decision will be made on retention or replacement of pipework, all in agreement with SDCC engineer.
- Remove existing redundant boiler, cut back redundant pipework to boiler up into ceiling & cap, remove heating controls, wiring and redundant heat emitters

including any pipework.

- Make good of all the affected surfaces from removed boiler, pipework and controls. Where existing opening in wall as a result of boiler flue wall should be filled with block and mortar ensuring no cold bridging. External and internal surfaces to match surrounding render/plaster. Internal wall to receive 2 coats of washable brilliant white paint to affected area.

Ceiling penetration as a result of cut back pipework to boiler to be patched, skimmed and c-coving to tie into existing finished with two coats of brilliant white paint.

Surfaces damaged as a result of removed controls and trunking to be filled and painted with 2 coats of washable brilliant white paint to affected area.

Supply, install and commission air to water monobloc heat pump central heating system, patching to ceilings, to include slimline hot water storage cylinder, where required radiator replacement, associated pipework, wiring,

controls and ancillaries. Monoblock unit to be floor mounted or wall mounted depending on property and space requirements. New heat pump unit should not impede access or service to other items such as access, existing AJs or gully. Routing of pipework from heat pump to internal system to run up the outside wall externally enclosed in galvanised or powder coated steel trunking, enter the property via a new core at 1st floor level and travel the shortest distance to the cylinder/manifold located in the hotpress with as minimal disturbance to the elements such as walls and flooring. Allow for lifting and reinstatement of timber floor, carpet and or laminate flooring or creation of openings and repatch in plasterboard ceiling in order to feed pipework through and remove blocking/bridging. Where pipes cannot be installed through intermediate floor cassette they may be boxed in timber or white uPVC pipe trunking system (falcon or similar) tight to ground floor ceiling, all to be agreed with SDCC engineer. The pipe work shall be supported from the underside of the ceiling, or side wall, using the manufacturer's fully adjustable thermally insulated split clamp brackets. A sleeve must be provided where the pipe work exits through the external wall and with bezels fitted to the internal and external face of the wall. The pipe work must not contain any joints within the wall sleeve.

The core should be sealed appropriately to prevent air infiltration and match the surrounding wall finish. Central programmer of heat pump to be located in the hotpress with internal space heating temperature readings provided by third party room stat located in hallway. All pipework in hotpress to be ran tight to wall adequately fixed in place with required brackets. Consideration to the routing of pipework should eliminate any runs of pipework which could result in movement/bending/splitting of the pipework. All required service parts to be accessible without the requirement to remove/dismantle any element of the installed system.

Redundant immersion switch to be blanked off.

- New installation of pipework to radiators shall be have a bracket every 1 metre, run vertically or horizontally, to be boxed in or enclosed in uPVC trunking (Falcon

or similar design/quality product). Adequate inspection hatches must be provided where pipe work is installed in a boxed-out enclosure.

- All wiring & safety devices required for the full operation of the heat pump to form part of the heat pump package. All surface mounted wiring to be housed in white uPVC square trunking and manufactured bends all to be mechanically fixed with Contractor to meet with SDCC

electrical inspector prior to commencing wiring to agree all electrical works.

- Electrical upgrade works – Refer to Works Requirements Doc section 2.6.1 & SDCC electrical specification.
- Supply and install of room stat to hallway including wiring and white square trunking mechanically fixed. Room stat to be at least 1.5m away from any radiator and out of direct sunlight.
- Electrical meter to power supply to heat pump.
- Replacement of heat emitters and brackets (radiators), including adjustment of pipework with allowance for additional lengths. TRV to radiators in all habitable rooms. Additional radiator's location agreed with SDCC engineer. No TRV where room stat is located.
- Testing and commissioning of each new heating system. Heating system to be balanced by opening all TRV, calling for heat and measuring room temperatures and tested with a thermal imaging camera.
- In person training with tenant on how to operate new central heating system. Contractor is to provide laminated manual in sleeved pocket to hotpress with concise clear pictorial instructions on how to operate the basic controls of the system such as time, temperature and hot water.
- Completion of all designer installer sign off sheets supplied with tender documents.
- Electrical post testing & Safe electric completion certs.
- Compiling all information & docs related to O&M files for each property.

2.4.30 Tenant training on operation

The appointed contractor is to provide adequate training to the tenant on the operation of the new heating system. Training should cover manual and timed operation of the space heating and hot water. Training should also cover the most efficient way to operate the system to reduce energy consumption and cycling of the heat pump.

2.5 Ventilation works

The approach to ventilation will be natural ventilation with intermittent extract fans or Demand Control Ventilation (DCV) where specified. The adopted approach per property will be dependent upon the air permeability of the fabric and applicability of system, the required system will be as per pricing document and works schedule. Below is a breakdown of the type of ventilation works required.

2.5.1 Wall core, sleeve & vent covers

The contractor is to provide a rate for masonry cores between 4-6” in diameter through a 350mm deep concrete/masonry solid/cavity wall. To include for supply and fit of uPVC sleeve, supply and fit external louvre with cowl cover, internal wall vent cover. Works should allow for making good of internal and external surrounding surfaces to core or any additional drill holes to match existing surrounding internal and external surfaces. uPVC pipe to be sealed in place with combination of mastic sealant and airtightness foam. Contractor to use dust suppression, dust extraction device and cover surrounding area with polyethene sheeting during coring. Contractor to supply scaffolding where required. Contractor to tidy area upon completion of works.

Background ventilation should be installed a minimum of 1.75m above floor level and distributed around the dwelling as evenly as possible to ensure there are no parts of the dwelling that are substantially less ventilated than others. Location of wall vent covers to be agreed with SDCC engineer.

To meet the follows requirements:

- Core size varying between 4-6 inches in diameter to be agreed with SDCC engineer.
- uPVC sleeve to match core size.
- External fixed louvre with round or square with insect mesh, white in colour, UV resistant, with a free area/space of 6,500mm² (or an equivalent area of 5,200mm²) measured in accordance with the method specified in I.S. EN 13141-1: 2004
- External cowl cover with a free area/space of 16,000mm² (or with equivalent area of 13,200mm²) Rython or equivalent brand. measured in accordance with the method specified in I.S. EN 13141-1: 2004.
- Internal wall vent cover adjustable 229mm X 229mm with a free air space of 6,350mm². (Where a combustion fuel source is present a fixed vent cover is to be installed.)

2.5.2 Supply and fit baffled controllable background wall vent kit with an external vent cowl

The contractor is to provide a rate for the supply and fit a baffled & controllable wall vent kit with additional external cowl, Rytons or equivalent product to an existing wall vent. This rate should exclude coring as this will be accounted for under section 2.5.1. Contractor to supply scaffolding where required.

To meet the follows requirements:

- Baffled & controllable wall vent kit 127mm diameter anti draught wall vent with an equivalent area of 6,500mm² Measured in accordance with the method specified in I.S. EN 13141-1: 2004, External grille U.V. stabilized white in colour.

- External Cowl vent cover to reduce draughts with a free area/space of 16,000mm² (or with equivalent area of 13,200mm²) Rython AC7HPWH or equivalent brand. Measured in accordance with the method specified in I.S. EN 13141-1: 2004.

2.5.3 Supply and fit adjustable vent

The contractor is to supply and fit a white uPVC 229mm X 229mm adjustable vent to internal wall. To include for all fixings. Quantity as per pricing document.

2.5.4 Supply and fit external wall vent/louvre

The contractor is to supply and fit cowlled external wall vent/louvre with fly screen to external wall surface. Works will involve working at height and contractor is to supply scaffolding.

2.5.5 Filterless centrifugal extract fan

The contractor is to supply and fit a decentralised mechanical extract ventilation fan (dMEV Extractor Fan). 230v filterless extract fan to kitchens and a 12V filterless extract fan to bathrooms (Xpelair CF20TX , Envirovent Filterless or similar). Fan to be installed to existing wall vent. Where a wall core/ roof vent tile is required this will be accounted under a separate item in the pricing document. Contractor to supply scaffolding where required.

Description of the required works below.

230V Filterless fan to kitchen

The contractor is to supply and fit a 230v filterless fan with external cowl vent to an existing kitchen wall vent, allowing for 0.5m of flexi duct. Power supply to the fan to be brought via a fused switched spur with cabling to the fan may be surface mounted in white flatback square uPVC trunking with manufactured bends fixed with mechanical fixings.

Specific Fan requirements:

- 230v Filterless fan to be a centrifugal continuous running 2 -speed filterless extract fan with humidity sensor.
- Fan performance to achieve a minimum of 19l/s on trickle and a maximum of 55l/s on boost
- IPX4
- 5 year warranty
- Kitchen trickle minimum 8.5l/s and minimum boost 55l/s

- at 14 watts and 55l/s at 30 watts, IPX4 rated, 5-year warranty, humidity tracking, fan to be 12v where fitted in bathroom zones 1, 2 & 3 as per BS 7671:2001.

12V Filterless fan to bathroom

The contractor is to supply and fit a 12v filterless fan (Envirovent selv or similar) to an existing bathroom wall vent allowing for 1.5m of flexi duct. Where a new core or roof vent tile is required, this will be accounted for under a separate item of a wall core or roof vent tile. Contractor should allow for electrical works & materials required to provide power supply to the fan, cabling to be surfaced mounted in white flatback square uPVC trunking with manufactured bends fixed with mechanical fixings. 3 pole Isolator switch located outside the bathroom at ceiling level over the doorway. Where there is an existing extractor fan, this fan is to be removed and all wiring to the fan made safe.

Specific Fan requirements:

- 12v Filterless fan to be a centrifugal continuous running 2 -speed filterless extract fan with humidity sensor.
- Fan performance to achieve a minimum of 14l/s on trickle and a maximum of 37l/s on boost
- SELV (safety extra low voltage) IPX5 12v where fitted in bathroom zones 1, 2 & 3 as per BS 7671:2001.
- 5 year warranty
- Bathroom trickle 14l/s & boost 37l/s.

2.5.6 Decentralised mechanical extract ventilation (dMEV) fan

The contractor is to provide a rate for the supply and fit a decentralised mechanical extract ventilation fan (dMEV) Monsoon MON-DMEVHP100HT or equivalent to an existing wall vent/core. Contractor should allow for electrical works & materials required to provide power supply to the fan, cabling to be surfaced mounted in white flatback square uPVC trunking with manufactured bends fixed with mechanical fixings, 1m of insulated flexible ducting, 3 pole Isolator switch located outside the bathroom at ceiling level over the doorway. Where there is an existing extractor fan, this fan is to be removed and all wiring to the fan made safe. Contractor to provide scaffolding where required.

Specific Fan requirements:

- Continuous running Humidistat, Timer, and Pull-cord centrifugal fan with extract performance up to 60l/s.
- Trickle and boost speed adjustable
- IP rated IPX5 for 230V and IPX7 for safe extra low voltage (SELV)
- 7-year warranty
- 12v low voltage to be fitted to all bathrooms.

2.5.7 Centralised Demand Control Ventilation (DCV)

The contractor is to design, supply and fit a centralised mechanical extract ventilation system (Demand control ventilation) aereco or equivalent.

Works to include design, supply and install demand control ventilation system; fan unit with a maximum specific fan power of 0.3 W/l/s to be located in attic, 12mm ply platform minimum 50mm above top of insulation located beside walk way, roof vent tile including insulated duct to fan unit, ductwork (minimum 25mm insulation in attic space), labelling of ducts, box-in of ductwork including painting, 12v low voltage exhaust units to incorporate various activation modes: humidity sensitive, presence detection, switch and CO₂, acoustic humidity sensor inlets to habitable rooms with a minimum opening area of 3500mm², an Airflow (min – max) @ 10 Pa 5-40m³/h at 10 Pa with a minimum acoustic attenuation of 40db,

inlet vent, external grilles with insect mesh, temporary polythene sheeting during core for water/dust containment and cleaning of wall internally & externally post core, disconnection and removal or existing extract fans making wiring safe, patch ceiling & 2 coats of white multi surface paint.

**Required wall cores to be accounted for under item 2.5.1 – Wall cores and therefore DCV system to be priced accordingly. **

- Proposed DCV unit must be listed on the SAP Appendix Q Database and must have an Irish agreement certificate with a Specific Fan Power required to be a min of .30W/L/S
- Fan unit to be fully insulated on antivibration feet, raised above insulation on plywood base the platform should be above the 350mm deep insulation and allowance of 25mm for deflection between the underside of the platform to the insulation between joists below. Timbers used should be C16 grade 2"x4" (100mmx44mm) laid on edge horizontally across roof joists with a 12mm plywood top. Materials shall comply with the requirements of Eurocode 5. Structural timber shall be strength graded to comply with EN 14081. All to approval of site engineer.
- All ductwork used must be rigid and fully insulated in attics with foil pipe insulation minimum of 25mm depth to be adequately fitted, fixed with brackets at 1m intervals and pipework labelled correctly.

- Box-in of duct work (floor to ceiling 2.4m average) in using battens and 12mm plywood with caulk to wall edges and timber filler to timber joints. Skirting board applied to all ground level of box in. Box in & skirting to be finished with 2 coats of white satin wood paint.
- Access hatch to be provided where elements require maintenance/servicing.
- Exhaust vents – to be removable for cleaning and can be wall or ceiling mounted with locations to be agreed on site with SDCC engineer. Exhaust vents to bathroom and toilets to be humidity and PIR sensor activated. Exhaust units to be 12v. All Exhaust vents to be balanced to satisfy Section 1.2.2 of the Technical Guidance Documents (TGD) Part F 2019. Balancing of system to be witnessed by SDCC engineer and records forwarded on contractors headed paper for each property.
- Humidity sensor wall vents – acoustic humidity sensor inlets to habitable rooms with a minimum opening area of 3500mm², an Airflow (min – max) @ 10 Pa 5-40m³/h, with a minimum acoustic attenuation of 40db. External grille to have draught proofers and insect grills.
- Fan unit to be installed with a neon lit isolation on/off switch located beside the fan unit at eye level.
- Fan unit fault indicator to be located above hotpress door supplied by low voltage power supply. Fault indicator should have text clearly stating the status of the system.
- All wiring to manufacturers installation instructions. Fan unit to be wired back to consumer unit with RCBO isolation unit at consumer unit is correct size/rating for DCVS unit as per manufacturer's instructions.
- Where existing extract fans are to be removed all wires must be made safe and ceiling/wall patched to match surrounding.
- Where cabling is surfaced mounted, to be enclosed in white flatback square uPVC trunking with manufactured bends fixed with mechanical fixings.
- All electrical components of install are compliant with IS 10101
- DCV system to be installed as per Technical Guidance Documents (TGD) Part F 2019
- Please refer to the floor plans and tender documents for description of the number of wet rooms and habitable rooms present in each particular house type.

2.5.8 Supply and fit Kitchen extract hood

The contractor is to supply and fit visor/integrated extract hood. Works to include coring of 6" core, approx. 3m of flexible duct approx., supply and fit of external wall mounted louvre with insect mesh. Contractor to use dust suppression and cover surrounding area with polyethene sheeting. Contractor to supply scaffolding where required.

2.6 Electrical works

To facilitate the installation and safe operation of the heat pump there may be a requirement to upgrade electrical elements. A sample survey of the properties carried out by SDCC electrical inspectors informs the contractor of the known and likely electrical works that will be required to be completed in order to enable the safe operation of the new heat pump. The pricing document will provide a scope of works for each situation that may arise.

Consumer units may need to be replaced to allow for additional protective devices required and increased electrical load or if the consumer unit is in poor condition or if it is a DZ type fuse board (screw in type porcelain fuses) and the meter tails between ESB Networks meter and consumer unit are less than 16sq.mm in size.

The new consumer unit should be mounted at the new regulation height (max 2.15 meters from FFL to top of protective device on highest rail of consumer unit) If there is enough slack on existing cables that can be rerouted to the new position of consumer unit.

Main earthing will also need to be upgraded as part of this work to comply with I.S.10101:2020 including a 10sq.mm earth to earth electrode.

Contractor should allow for all other wiring for the safe operation of their chosen heat pump. It is up to the contractor to include for all costs for the wiring related to the chosen heat pump.

Where new wiring is being terminated at existing consumer units or to a sub consumer unit the following additional works are required. Surge protection to be installed & existing AC type RCD'S/ELCB'S are to be replaced with A type RCD's. (New consumer units installed should already have surge protection & type A RCD'S fitted)

Refer to Appendix C for SDCC Electrical Specification for Energy Retrofit – Heat Pump Program for full details on electrical works required for Energy Retrofit programme.

2.6.1 Upgrade of consumer unit (existing height), meter tails & main earth

Where an existing consumer unit is at high level inside the door of the property but unsuitable due to the consumer unit being an outdated DZ type fuse board, age / poor condition, insufficient space for additional protective devices and the meter tails are 10mm² the contractor will be required to supply and install a new consumer unit to the existing position, meter tails and main earth contractor

Contractor is to supply and install of the following:

- 2 row consumer unit to replace existing consumer unit in its current location and height.
- 16mm² meter tails between consumer unit and ESB meter
- 10 mm² main earth cable – chasing of concrete may be required
- earth electrode, denzo tape and inspection box
- Main 63amp MCB isolator in suitable enclosure fitted in ESB meter cabinet

- Post testing
- Contractor to allow for ESB reconnection fee (type 1 Electrical completion certificate), certificate and management of process with ESB

2.6.2 Upgrade consumer unit (regulation height), meter tails & main earth

Where an existing consumer unit is deemed unsuitable and is located at low level and where there is slack on the electrical cables, the contractor is to supply and install a new consumer unit located in the hallway to regulation height where there is slack on the electrical cables.

Contractor is to supply and install of the following:

- 2 row consumer unit to replace existing consumer unit
- The new board to be mounted at the new regulation height. (Max 2.15 meters from FFL to top of protective device on highest rail of consumer unit)
- 16mm² meter tails between consumer unit and ESB meter
- 10 mm² main earth cable – chasing of concrete may be required
- earth electrode, denzo tape and earth inspection box
- Main 63amp MCB isolator in suitable enclosure fitted in ESB meter cabinet
- Post testing
- Contractor to allow for ESB reconnection fee (type 1 Electrical completion certificate), certificate and management of process with ESB

2.6.3 Supply and install consumer unit (existing height)

Where an existing consumer unit located internally at high level is deemed unsuitable due to age or lack of space for protective devices but the meter tails from the ESB meter to the consumer unit are the required 16mm² and the main earth is the required 10mm² the contractor is to replace the board only.

Contractor is to supply and install of the following:

- 2 row consumer unit to replace existing consumer unit
- Post testing
- Contractor to allow for ESB reconnection fee (type 1 Electrical completion certificate), certificate and management of process with ESB

2.6.4 Supply and install consumer unit (regulation height)

Where an existing consumer unit is not located at regulation height and deemed unsuitable due to age or lack of space for protective devices but the meter tails from the ESB meter to the consumer unit are the required 16mm² and the main earth is the required 10mm² the contractor is to replace the board only.

- 2 row consumer unit to replace existing consumer unit
- Post testing
- Contractor to allow for ESB reconnection fee (type 1 Electrical completion

certificate), certificate and management of process with ESB

2.6.5 Supply and install sub consumer unit

Where an existing consumer unit is single row with insufficient space for additional protective devices and the meter tails from the ESB meter to the consumer unit are the required 16mm² and the main earth is the required 10mm² the contractor is to supply and install a sub consumer unit to regulation height.

Where new wiring is being terminated at existing consumer units or to a sub consumer unit the following additional works are required: Surge protection to be installed & existing AC type RCD'S/ELCB'S are to be replaced with A type RCD's. (New consumer units installed should already have surge protection & type A RCD'S fitted)

Contractor is to supply and install of the following:

- sub consumer unit to replace existing consumer unit
- Post testing
- Contractor to allow for ESB reconnection fee (type 1 Electrical completion certificate), certificate and management of process with ESB
- Installation of surge protection & replacement of existing AC type RCD'S/ELCB'S are to be replaced with A type RCD's.

2.6.6 Supply and install meter tails

Where an existing consumer unit is deemed suitable but the existing 10mm² meter tails are inadequate for the electrical loads the contractor is to provide a rate for the upgrade of the meter tails up to 4 linear metres.

Contractor is to supply and install of the following:

- 16mm² meter tails between consumer unit and ESB meter
- Post testing
- Contractor to allow for ESB reconnection fee (type 1 Electrical completion certificate), certificate and management of process with ESB

2.6.7 Supply and install 63amp fuse in IP rated enclosure

Contractor is to provide a rate for the supply and installation of main protective 63amp 9ka MCB in suitable IP rated enclosure located in ESB meter cabinet (where replacement meter tails will be longer than 3 meters in length or not mechanically protected along route of cable run).

Contractor is to supply and install of the following:

- 63amp 9ka MCB
- Suitable IP rated enclosure located
- Post testing
- Contractor to allow for ESB reconnection fee (type 1 Electrical completion certificate), certificate and management of process with ESB

2.6.8 Supply and install main earthing cable, electrode & electrode box

Contractor is to provide a rate for upgrade of existing main earthing to consumer unit.

Contractor is to supply and install of the following:

- 10mm² main earthing from consumer unit to electrode
- Electrode
- Electrode inspection box
- Post testing
- Contractor to allow for ESB reconnection fee (type 1 Electrical completion certificate), certificate and management of process with ESB

2.6.9 Supply and install surge protection and AC type RCD's/ELCB's

There may be situations where a 2 row consumer unit has been replaced within the last couple of year but will not have surge protection and will have existing AC type RCD's/ELCB's. The contractor is to provide a rate for:

- Installation of surge protection & replacement of existing AC type RCD'S/ELCB'S are to be replaced with A type RCD's and post testing.

2.6.10 Hourly rate for electrician

The contractor is to provide an hourly rate for a Registered Electrical Contractor (REC) with Safe Electric for typical domestic electrical works that may arise from a notice of potential hazard (NOPH) as a result of post testing. Cost for materials to be submitted to SDCC Quantity surveyor for agreement.

2.7 Airtightness works

This sections outlines works related to airtightness measures to reduce the air leakage to the building envelope.

2.7.1 Sealing penetrations to external building envelope

The contractor is to seal all penetrations/gaps to the external envelope up to height of upper most internal ceilings (external concrete masonry wall). Such penetrations can

include but are not limited to drill holes, surrounding gap to waste pipes, service penetrations & redundant openings to flues. Contractor should carry out site inspection or review photos to inform them to the level of penetrations to be sealed.

Large penetrations to be closed such as redundant cores/vents to be blocked up with brick/block and mortar externally & internally, ensuring not to create a cold bridge between inner and outer masonry leaf and finish to match existing/ surrounding (sand cement or wet dash render). Smaller penetrations such as pipe & service penetrations may be sealed with a mixture of airtightness foam covered over with a suitable exterior sealant (coloured sealant where appropriate).

2.7.2 Sealing around internal soil vent pipe

The contractor is to seal the void between the soil vent pipe and the boxing-in where this enters the attic space.

The contractor is to cut a square opening adjacent to the box in concealing the internal soil vent stack pipe. Install a mineral wool approximately 100mm deep to surround the entire circumference of the internal soil vent stack pipe. The contractor will apply a layer of airtightness foam on top of the mineral wool to prevent air infiltration from the attic space. Contractor will then reinstate the cut section of plasterboard, skim and finish ceiling with 2 coats of brilliant white ceiling paint.

Contractor to provide video evidence of full sealing between soil vent pipe and box-in. Air tightness foam Soudafoam Windows & Doors SWS or similar and to have an air permeability of a $< 0,1 \text{ m}^3/[\text{h.m.}(\text{daPa})^{2/3}]$.

2.7.3 Sealing penetrations to ceilings

The contractor is to seal all penetrations to the uppermost ceiling. Typically 4-10 openings and penetrations in each dwelling will need to be sealed appropriately. Visible surfaces such as ceilings within habitable rooms to be sealed to match the surrounding ceiling surface. Smaller penetrations from cables or pipework may be sealed with a filler or mastic.

Penetrations to hot press ceiling to be sealed with airtightness tape. Smaller penetrations may be sealed with a mastic/foam where appropriate. Pipework insulation to be pulled back when applying the airtightness measures.

Floor – Airtightness membrane and airtightness tape to be installed to cover all openings and penetrations to the hot press floor.

The airtightness membrane extending up the wall to be affixed with air Where membrane is cut in strips it should be lapped by 50mm and sealed with airtightness tape. All penetrations such as pipes or cables to be sealed with airtightness tape or EPDM grommets as necessary.

Air tightness membrane tested to EN 13859-2 and BS EN 12114, ≤ 0.0095

($\text{m}^3/(\text{m}^2 \cdot \text{H} \cdot 50\text{Pa})$), Nail tear resistance MD/CD BS EN 13859-1 (B) 200N

Air tightness adhesive tape tested in accordance with DIN 4108-7, SIA 180 or OENORM B 8110-2. Airtightness tape as per manufactures installation recommendations, Pro Clima Tescon Vana or similar product.

2.7.4 Sealing of fireplace

The contractor is to permanently seal up the fireplace. Works to include: Sweep of entire chimney flue and remove debris, supply & install 180mm vented Clay Terracotta C-cap to top of chimney pot complying to EN 13502:2002, closing/sealing of fireplace opening approx. 450mm high X 600mm high at room level with a false wall constructed of 44mm X 100mm (2x4") studwork, 75mm PIR insulation, 12mm MDF to face, 229mm X 76mm adjustable vent with opening through to firebox to vent chimney, 2 coats of white multi-surface paint, mastic to surround. Contractor to supply scaffolding where required.

2.7.5 C-cap to chimney

The contractor is to provide a rate for the supply and installation of a 180mm vented Clay Terracotta C-cap to top of chimney pot complying to EN 13502:2002. Contractor to provide scaffolding where required.

2.8 Miscellaneous works

2.8.1 Porch soffit insulation works

Contractor is to carry out all work and supply all materials required for insulation of porch soffit. Works to include;

Temporary removal of light fitting to soffit for reinstallation, removal & disposal of existing soffit covering, installation of approx. 1.5m² of 125mm PIR insulation between joists, installation of intelligent airtightness membrane & airtightness tape, reslab with cement board and fixings, Flexible mastic to edges, prepare surface & apply two coats of exterior emulsion white paint and refix lighting fixture to soffit.

Intelligent Airtightness membrane tested in accordance with EN 13859-2 and BS EN 12114, $\leq 0.0095 (\text{m}^3/(\text{m}^2 \cdot \text{H} \cdot 50\text{Pa}))$, Nail tear resistance MD/CD BS EN 13859-1 (B) 200N (PHS astra, Pro clima Intello plus or similar product).

Air tightness adhesive tape tested in accordance with DIN 4108-7, SIA 180 or OENORM B 8110-2. Airtightness tape as per manufactures installation recommendations, Pro

Clima Tescon Vana or similar.

2.8.2 Supply and install ESB meter box

Contractor is to supply and install an ESB meter box with door to side infill panel of front door. This is to allow access to the existing ESB meter located at a low level within the existing door frame. The Contractor is to carefully cut the infill panel ensuring so as there are no sharp edges. The door frame must not be cut. The new ESB meter box should be positioned and fixed into place using adhesive. The perimeter of the ESB meter box is to be sealed to the frame using mastic to match door frame.

2.8.3 Supply and install shelving to boiler press

Contractor is to supply and fit two 18mm white matt melamine faced chipboard double sided melamine white edging tape strip to face, shelf supports and approx. 0.9m² of 3mm white Melamine board backing fixed with L brackets to existing press of average dimensions 800mm wide & 400mm deep.

2.8.4 Boiler wall painting

Contractor is to make good of wall surface where boiler has been removed. The surface should be cleaned free of dust/grease, wallpaper removed and made smooth with sand cement plaster/skimcoat/filler where required. The wall is then to be painted with two coats of brilliant white paint. Approx area of 1.5 m².

2.8.5 General internal painting

The contractor is to provide a rate for general internal painting walls/ceilings for disturbed surfaces example where a radiator has been relocated to another wall. The contractor should prepare the wall by ensuring that the surface is smooth, free from dirt/dust/loose material and apply a primer coat followed by two coats of brilliant white paint. Quantities as per pricing document.

2.8.6 General internal plastering repairs

The contractor is to provide a rate for general internal plastering repairs. The surface should be prepared by ensuring all loose material is removed and free from dirt/grease. A minimum of 2 layers of 3mm skimcoat to be applied to surfaces. To include for all beading required.

2.8.7 Supply and install laminate flooring

The contractor is to provide a rate for the supply and installation of a timber effect laminate flooring to match the existing laminate flooring of that room. Rate should include for take up and set aside for reinstall of skirting boards, saddle board, door, edge trim/beading and radiator rosettes, take up and disposal of existing flooring covering to a licensed facility, supply and installation of new timber effect laminate flooring including underlay and fixings/glues. Boards to be installed with a 10mm gap against the walls. Quantities as per pricing document.

2.8.8 Timber box-in

The contractor is to supply a rate for the timber box-in of pipework. Box-in of varying depths up to 350 X 350 mm to be constructed using moisture resistant 12mm MDF board on 44mmX100mm (2X4”) battens, timber skirting to match existing of room and finished in two coats of multi surface white paint. Screws to be counter sunk and filled over with wood filler. Access hatches to be provided to any valves/maintenance. Quantities as per pricing document.

2.8.9 Alteration to hotpress

There may be a requirement to create an access panel on the opposite side of a wall to the hot press to ensure access to all element of the heating system located within the hot press. The contractor is to create an access panel through the timber stud wall of adequate size to ensure access to all serviceable elements of the system installed, timber frame to opening, plywood panel, mechanical fixings, architrave to perimeter, finished with two coats of white multi surface paint.

2.8.10 Alteration to Attic Hatch

The attic hatch may require carpentry works in order to allow for works required within this specification. Carpentry works can range from light to alteration works. Light works will include removal of hinges, installation of new hatch stop end to perimeter of hatch and installation of new architrave to ceiling perimeter of hatch. Painting 2 coats of multi surface white paint to architrave and hatch cover

2.8.11 Construct attic hatch

The contractor is required to create a new attic hatch in order to allow for insulation works to take place. Typical works required creating opening in plasterboard ceiling approx. 400mm wide by 750mm long, supply and fit fix trimmers between joists and hatch lining, 12mm plywood hatch cover to suit opening with 125mm insulation to back of plywood fixed with adhesive and edge wrapped with multiple layers of duct tape and architrave to new opening with finish of two coats of white multi surface paint to hatch.

Timbers used should be C16 grade 2”x6” (150mmx44mm) Materials shall comply with the requirements of Eurocode 5. Structural timber shall be strength graded to comply with EN 14081. All to approval of site engineer. Quantities as per pricing document.

2.8.12 Reslab ceiling

The contractor is to provide a rate for supply and installation of 12.5mm plasterboard to

tie into existing ceilings. To including all associated fixings and tapes, two coats of skimcoat to a minimum overall thickness of 4mm, reinstall ceiling light fittings and seal penetrations, finish with 2 coats of brilliant white ceiling paint. Quantity as per pricing document.

2.8.13 Supply and install downlight covers

Contractor is to provide a rate for the supply and installation of Airtight Downlight guard per spotlight (Halolite downlight guard or similar). If the guard is not airtight the downlight must be sealed with airtightness tape & sealant to prevent air leakage from the attic space. Existing attic insulation is to be temporarily removed, downlight cover installed, and insulation re-laid around and over the newly installed downlight cover. Quantities as per pricing document.

2.8.14 General external painting

Contractor is to supply a rate for the general painting of external wall including chimneys. Works required preparation and cleaning of substrate, supply and application of 2 coats of brilliant white exterior masonry paint to a range of surfaces (unrendered block, rendered block including pebble dash). Quantities as per pricing document.

2.8.15 Construct concrete footpath

Contractor is to provide a rate for the extension/construction of a new 900mm wide concrete footpath.

Allow for the excavation of a of topsoil to a depth of 200mm and dispose from site to a licensed facility, Provide sub-base 100mm depth- Clause 808 material & Construct Concrete Footpath Repair – 100mm depth - C28/35-D10-S2 with extra sand. Brush finish with bull nose finish to edges. Expansion joints to be cut or formed every 3m within footpaths. A maximum crossfall of 2.5%. Longitudinal gradients shall make do allowance for their intended use and shall not exceed 5%. Where a newly constructed path adjoins an exiting the contractor should install a rainwater soakaway to heat pump soakaway spec. On completion backfill topsoil to the edge of the newly constructed footpath, grade accordingly and sow grass seeds to the affected areas. Ensure no trip hazards are present on completion. All to approval of site engineer. Quantities as per pricing document.

2.8.16 Saw cut masonry concrete wall

Masonry concrete walls abutting the external wall of a property that is to be externally insulated, may need to be cut back to allow for the installation of external wall insulation. A vertical sawcut through the wall will be required.

Contractor is to provide a rate for saw cutting for external boundary walls. Masonry wall

typical construction is of concrete block with render finish and precast wall capping. Wall height can vary from 0.5m high to 2.2m high.

Thickness of masonry wall can vary from 0.100m to 0.250m. Quantities in linear metres as per pricing document.

2.8.17 Demolition masonry concrete wall

Contractor is to provide a rate for demolition and disposal to licensed facility of masonry concrete wall. Wall constructed of concrete block with render finish and precast wall capping with approximate measurements of 2.0m high 0.23m thick. Quantities as per pricing document.

2.8.18 Construction of concrete pier

Contractor is to provide a rate for the construction of foundation and masonry concrete pillar tied into an existing masonry wall.

Foundation details – excavate 400mmX 400mm to a depth of 500mm deep dispose from site to a licensed facility, provide sub-base 100mm depth-Clause 808 material, A393, & Construct insitu Concrete foundation 200mm deep class C25/30 concrete.

Masonry concrete pier Details - pier constructed using 440x215 7.5N block on flat, 10mm mortar joints, tied to existing wall with dowels and chemical anchor. Approx height 2.4m. 18-20mm Sand cement render to Blockwork. Quantities as per pricing document.

2.8.19 Take down and reinstall timber side gate

Contractor is to supply a rate for take down and set aside timber gate for reinstallation. Timber side gate of approx. measurements 1.8m high X 0.9m wide. Contractor to allow for all fixings required.

2.8.20 Supply and install timber side gate

Contractor is to provide a rate for the supply and install a new timber side gate of approx. measurements 1.8m high X 0.9m wide (Final site measure required). Gate to be constructed of pressure treated timber, with zinc plated hinges top and bottom and 6” lockable pad bolt with receiver, secured to concrete wall with batten & rawlplug bolts.

2.8.21 Supply and install shower pump

Contractor is to supply and install a twin impeller brass shower pump to shower feed. Pump to be minimum 1.5 bar. Pump to be located in hotpress anti-vibration feet. Minimum 2-year guarantee. Stuart Turner or similar product.

2.8.22 Air quality monitoring & sampling

The Contractor is to provide a rate for the implementation of an air quality monitoring/sampling strategies suitable as determined by the contractors risk assessment for the contractors method statement for working with asbestos containing materials.

Asbestos Exposure air monitoring samples must be analysed by Phase Contrast Microscopy (PCM) in accordance with the Safety Health and Welfare at Work (Exposure to Asbestos) Regulations, 2006-2010.

2.8.23 Asbestos Removal & re-occupation certification

The contractor is to provide a rate for the safe removal and disposal of asbestos containing material to a licensed facility. Contractor should refer to Asbestos surveys to inform level pricing.

Price should include for; The contractor shall allow for a PPE, fully trained crew including site supervisor to create an enclosure, fixed and secured hoarding to decompartment the work are in accordance with SDCC requirements. The structure will be adequate for the purposes of removing, repairing & encapsulating asbestos based products. It will be sealed directly to the enclosure by means of heavy-duty tape and high adhesive glue. Where enclosures are adjacent to occupied areas the enclosure wall and air lock will be constructed of a double skin of 1000g polyethylene sheeting. Where asbestos containing insulation will be removed it will be removed using a technique which minimises breakage. Removal methods must include the use of injection systems to saturate the materials. Dry removal processes are unacceptable. As the asbestos containing material is removed it must be bagged immediately, thus ensuring that the working zone is kept as clean as possible and reducing the amount of final decontamination required. All asbestos material will be manually removed and deposited directly into 800g red polythene sacks. After the execution of all asbestos work, all asbestos waste shall be wrapped, packaged, labelled, stored and sealed. The Contractor shall allow for the waste to be transferred under C1 form from site. Waste to be exported under TFS form to a licensed disposal site. Completed C1 and TFS forms to be provided to SDCC. The Contractor shall include for the complete decontamination / cleaning of all areas from which asbestos materials are removed

The need for air monitoring should be determined as part of the risk assessment of the work and if required should be included as part of rate for asbestos removal. It must only be undertaken by a competent person or company.

Note: that a copy of C1 documentation and disposal certificates will be made available to the Client and all record documentation upon completion

Waste will be disposed of in accordance with the following Statutory Regulation:

- Waste Management Act 1996
- Waste Management (Collection Permit) Regulations, 2007
- European Communities (Shipments of Hazardous Waste exclusively within Ireland)
- Regulations, 2011 (S.I. No. 324/2011)
- Waste Management (Shipments of Waste) Regulations 2007
- Air Pollution Act 1987
- Local Government (Water Pollution) Act 1977
- 33 European Communities (Toxic C SI 33 European Communities (Toxic Dangerous Waste) Regulations 1992.
- SI NO. 30 The European Communities D SI No. 30 The European Communities (Asbestos Waste) Regulations 1990. note (Asbestos Waste) Regulations 1990.

Collection Permits Regulation 2001 & H Collection Permits Regulation 2001 & Amendments

All works should comply with The Safety, Health and Welfare at Work (Asbestos) Regulations 2006-2010 and HSG247 Asbestos: The licensed contractors guide.

3.0 Appendices

3.1 Appendix A -Tender Submittals

Appendix A – Tender Submittals

Tenders must submit staff structure they will resource the project with and the proposed products and materials to be used with tender for assessment and approval

Proposed Project Staff:

Profession	Minimum Quantity	Experience
project manager	1	Minimum 5 years' experience in residential construction/retrofitting
site manager	1	Minimum 2 years' experience in residential construction/retrofitting
finishing foreman	1	Minimum 2 years' experience in residential construction/retrofitting
Plumbing Contractor	6	minimum six plumbers with two of which to be certified in heat pump installation & trained by the manufacturer of the contractors chosen heat pump brand
Electrical contractor	two registered electricians	Minimum of two Registered electricians (REC) with experience in heat pump installations of benefit
Window & Door Contractor	one senior installer three operatives	Senior installer to have 5+ years installation experience
cavity wall insulation Contractor	At discretion of Main contractor	NA
SEAI approved roof insulation contractor	At discretion of Main contractor	NA
Chimney Contractor	At discretion of Main contractor	NA

Proposed Materials:

Product and material tender submission checklist		
Item	Detail	Submitted Yes / No
Attic Insulation		
Mineral wool Insulation	Product Data certs & declaration of performance for the mineral wool & PIR insulation	
	Confirmation of the U-value, Thermal resistance	
Foil backed rigid insulation board	Product Data certs & declaration of performance for the mineral wool & PIR insulation	
	Confirmation of the U-value, Thermal resistance	
Wall Insulation		
Pumped bead wall Insulation	Product Data certs & declaration of performance for the mineral wool & PIR insulation	
	Confirmation of the U-value, Thermal resistance	
<u>External wall insulation</u>	Product Data certs & declaration of performance for EWI	
	Confirmation of the U-value, Thermal resistance	
Reinforcing mesh	Product data cert	
Adhesive	Product data cert	
Render coat	Product data cert	
Starter track	Product data cert	

PVC window boards	Product data cert	
Windows and Doors		
Windows	Product data certs & declaration of performance for windows	
	Product data certs & declaration of performance for airtightness foam	
	Certification of U-value, thermal resistance & solar gain performance for windows Window Energy Performance (WEP) rating/BFRC	
Composite Door	Product data certs & declaration of performance for Composite door	
	Product data certs & declaration of performance for airtightness foam	
	Certification of U-value, thermal resistance & solar gain performance for each Front door, rear door and windows Window Energy Performance (WEP) rating/BFRC	
Rear PVC Door	Product data certs & declaration of performance for rear pvc door	
	Product data certs & declaration of	

	performance for airtightness foam	
	Certification of U-value, thermal resistance & solar gain performance for each Front door, rear door and windows Window Energy Performance (WEP) rating/BFRC	
Rear PVC French Double Door	Product data certs & declaration of performance for rear pvc French door	
	Product data certs & declaration of performance for airtightness foam	
	Certification of U-value, thermal resistance & solar gain performance for each Front door, rear door and windows Window Energy Performance (WEP) rating/BFRC	
New Central heating system		
Heat pump –	Heat pump product data sheets & declaration of performance (ERP labels, product fiche)	
	User manual	
	Warranty	
Isolator switch	Product data sheet	
Din rail energy meter	Product data sheet	

3rd party wall stat –	Product data sheet	
	User manual	
	Warranty	
Domestic hot water cylinder –	Cylinder product data sheets & declaration of performance (ERP labels, product fiche)	
	User manual	
	Warranty	
Radiators –	Product data sheets	
	User manual	
	Warranty	
Thermostatic radiator valves	Product data sheet	
Heat pump cage -	Product data cert of heat pump cage	
Mechanical Ventilation		
Filterless fans	Product data sheets and declaration of performance Filterless fan	
	Manual	
	Warranty	
Demand Control system	Product data sheets and declaration of performance DCV system	
	Manual	
	Warranty	
Air Tightness		
Air tightness foam	Product data cert for air tightness foam	

Air tightness membrane	Product data cert for air tightness membrane	
Electrical		
Consumer unit	Product data cert consumer unit	
Sub consumer unit	Product data cert sub consumer unit	
Trunking	Product data cert	
Fused spur switch	Product data cert	

3.2 Appendix B - SDCC Mechanical Specification for Energy Retrofit

Updated: S.D.C.C: 06/2024

**SOUTH DUBLIN COUNTY COUNCIL STANDARD
SPECIFICATION**

SPECIFICATION FOR

INSTALLATION OF AIR TO

WATER

HEAT PUMP CENTRAL HEATING SYSTEMS IN NEW /

EXISTING DWELLINGS

**SOUTH DUBLIN COUNTY COUNCIL ARCHITECTS
DEPARTMENT**

SPECIFICATION FOR INSTALLATION OF HEAT PUMP CENTRAL HEATING SYSTEMS IN NEW/EXISTING DWELLINGS

CONTENTS

1. General
2. Compliance with Standards and Regulations
3. Safety Statement
4. Equipment to be installed in each dwelling
5. Heat pump
6. Domestic Hot Water
7. Circulating Pump
8. Radiators
9. Expansion Level
10. Controls
11. Pipework- Copper
12. Safety valve
13. Auto bypass
14. Magnetic filter
15. Condensate discharge
16. Valves
17. Air vents
18. Brackets and supports
19. System flushing
20. Water treatment
21. Testing and commissioning
22. Labelling and identification
23. DIAGRAM 1. - Central Heating System Schematic

SPECIFICATION for installation of Heat Pump central Heating Systems in new/existing dwellings for South Dublin County Council.

General

This specification covers the requirements and conditions for the installation of heat pump central heating systems into occupied or new build council dwellings. It should be read and construed together with drawings indicating layout of emitters and design of heating systems generally.

Properly designed and sized radiator circuits may be used.

The system design will be as indicated on the Diagram 1 ‘Schematic Layout’ appended, and with the heating and plumbing layouts.

All motorised valves, thermostats and programmers will be included to achieve maximum control and energy efficiency as specified. Samples of all materials will be supplied for approval by South Dublin County Council before any installation work commences.

A twelve-month maintenance period applies to this contract. The true meaning and intent of all clauses of the S.D.C.C. General Housing Specification applies as do all clauses of GDLA 82.

Compliance with Regulations

The installation of heat pump central heating will be carried out by suitably qualified and competent tradesmen and in accordance with the Building Regulations. The contractor will be required to hold appropriate Certification to work on heat pump heating systems for South Dublin County Council and evidence of this certification will be required before installation work commences. All installations must be tested, commissioned, and certified in accordance with requirements.

Safety Statement

The contractor will be required to produce a current Health and Safety Statement in accordance with the Health and Safety at Work Act 2005 Equipment to be installed in each Dwelling

The central heating system shall comprise of a new air to water heat pump serving space heating zone(s) and a domestic hot water cylinder.

The heat pumps in general are to be installed either floor mounted on ground level via a plinth on mounting feet, or wall mounted on cantilever arms on anti-vibration mounts with integrated drip tray and condensate pipe fitted to drain/Mc Alpine soakaway where drain is not close by. Where unit is fitted at

ground level a safety cage/vandal is to be supplied and fitted in accordance with manufactures requirements, cage is to be weather protected and agreed with SDCC staff.

The heating and hot water service shall be controlled automatically and independently by time and temperature. Dwellings above 100m² in floor area shall have independent control in sleeping and living areas.

Both split-type and monobloc heat pumps are acceptable (**SDCC preference is for mono block**), subject to space constraints both internally and externally, and provided they meet the minimum requirements in this specification and are agreed in advance.

The Contractor must ensure that the heat pump is securely fixed on an approved floor mounted fixing system. Where the background material or structure is inadequate to support the heat pump, the Contractor must install, or arrange to have installed, an appropriate support system to safely support the heat pump.

Where the heat pump / indoor unit is in a cupboard or other compartment background ventilation shall be provided at high and low level in the space and as per manufacturer's requirements. The Contractor must also ensure that adequate space is provided for the removal of all access panels to allow proper maintenance. Any structure built around the heat pump or indoor unit must not interfere in any way with the correct operation of, or access to the heat pump and all ancillary equipment, including isolation valves and electrical accessories or for maintenance.

The location of the heat pump drain discharge point must be installed fully in accordance with the recommendations of the manufacturer and as agreed with the Client.

A sleeve must be provided where the pipe work exits through the external wall and with bezels fitted to the internal and external face of the wall. The pipe work must not contain any joints within the wall sleeve.

Heat Pump

Minimum requirements: The heat pump must meet the following minimum requirements:

The heat pump unit (Firebird/Panasonic or equivalent.) must be registered on the SEAI Triple-E database or be confirmed to have similar technical requirements.

The new heat pump should be inverter driven (allowing maximum efficiency at part load and full load) and have a rated seasonal coefficient of performance @35°C flow of at least 4.2 (420% efficiency), and a rated seasonal coefficient of performance @55°C flow of at least 3.2 (320% efficiency).

Space heating must meet EN14511, EN14825 and have an efficiency of 130% - P-Rating
Hot water must meet EN16147 and have an efficiency of 100% - P-Rating.

Heat pump should be capable of delivering 100% of the load without the need of a back up heater being required.

The new heat pump system shall be capable of being connected and/or operated through the internet or GSM remote maintenance alarm facility.

Unit should be capable of holding its settings(parameters) for a minimum of 3 months.
Unit should have either mechanical and or electrical frost protection, in accordance with manufactures guidelines and recommendations, frost/freeze valves

Ethylene based glycol should not be used in systems.

A calibrated and suitably certified electric meter / monitor shall be installed on the heat pump system, to monitor system usage.

The heat pump should be of sufficient capacity to satisfy the heating load at -3°C outdoor temperature with a design flow rate of 45 °C (to be met by the heat pump's compressor only).

There should be time & temperature functions for each heating and hot water zone.

There should be automatic operation via weather compensation for space heating temperatures.

Cooling function should be disabled via a dip/mechanical switch and should not be accessible to the tenant via the control panel.

Unit Y strainer should be in the property, ideally in the hot press on the primary return and be accessible for servicing and maintenance.

Magna clean should be in the property, ideally in the hot press on the primary return and be accessible for servicing and maintenance.

Isolation valves to be fitted on the primary flow/return at the heat pump unit.

There should be a backup immersion (minimum 3kW) should be present (DHW only). The heat pump installed shall have an operating sound power level of no greater than 45dBA from the external unit in operation at full load / speed or alternatively a sound pressure level of no greater than 40dBA from the external unit in operation at full load / speed when measured at the nearest dwelling wall / window / opening.

The heat pump shall be capable of carrying out a legionella thermal disinfection of the hot water cylinder weekly, maintaining the temperature in the cylinder at least 60°C for a minimum of 60 minutes.

The system volume should be achieved through the system and details/calculations should be provided; this volume should be unrestricted.

System Operation

- Efficient operation of the system is essential, and the main requirements are.
- Maintain a space heating flow temperature (45°C) as low as possible at all times to maximise the efficiency of the system.
- Achieve an optimum cycling rate, which is not excessive.
- Expansion and contraction to be taken up using a sealed system with filling loop and expansion vessel.
- Pipes shall be joined according to approved standard methods to B.S. / I.S. Codes of Practice.
- Flow and return pipework from the heat pump shall have a minimum diameter of 28mm to the first radiator outlet of each circuit or further as appropriate to achieve the satisfactory flow rate.
- No joints shall be used on pipework within the concrete slab between radiator outlets, as this will allow for easy withdrawal and replacement.
- The heat pump system shall operate at 230 Volts 50 Hz single phase. It shall be suitable for operation with, and connection to a sealed system.
- Where a heat pump unit is enclosed in a cupboard or compartment, particular attention shall be given to its ventilation requirements in accordance with the Building Regulations 2014 Part J.
- Domestic Hot Water Cylinder
- Unless otherwise advised by S.D.C.C., all heat pump retrofits will require the hot water cylinder in the dwelling to be replaced.
- The new cylinder may be a stand-alone copper cylinder as part of a monobloc heat pump system.

- The cylinder shall be a fully factory insulated floor-mounted type complete with flow and return primary pipework connections including HWS flow, control thermostat, high limit thermostat, drain cock and thermometer, and should come complete with a temperature & pressure combined relief valve.
- The unit shall be thermally insulated to ensure compliance with TGD Part L and be either ErP B rated or have a standing loss of less than 1.8kWh/day when measured as per EN16147.
- The unit should be minimum 150-litre capacity and a heating coil capable of recovering the DHW to 50°C from cold in less than 1 hour.

The cylinder shall be stainless steel, copper or enamelled (glass lined) type.

The Contractor must obtain from the manufacturer a test certificate for the cylinder that must include the material thickness for the cylinder shell and domes together with the grade and surface area of pipework used for the heating coil.

Heating Circulation Pumps

The Contractor must select a suitable pump to match the system pressure and flow characteristics with a minimum 9m head pump with a flow rate of 1.3m³. The heat pump manufacturer recommendations must also be adhered to and taken into account when selecting a suitable pump. The Contractor must ensure that the pump selected is sufficiently rated to correspond with the pressure and flow requirements of the system. If a separate circulating pump is installed, then separate pipework mounted isolating valves must be fitted. In order to ensure a properly integrated system of control for the pump, the heat pump controls system must be capable to power and control the operation of the external circulation pump.

Radiators

When radiators need to be installed, the radiators shall be as detailed in the schedule or similar in output and physical dimensions. A copy of the radiator size schedule shall be provided from the relevant radiator manufacturer before any heating pipework is installed. Each radiator shall be a set height locating the bottom of the radiator between 150mm and 175mm from the finished floor level. All pipework above ground to radiators and fixtures shall be either fully vertical or horizontal and in line with the intended position of the appliance. Where pipework is boxed in underneath radiators, a gap of 75mm must be maintained underneath the radiator to allow for air circulation around the radiator. The radiators shall be steel plate, roll top, convector type. The contractor is to include for removing and refitting the radiators for painting purposes. Each radiator shall be capable of producing their stated

output. The radiators shall be hung distributing the weight evenly in their brackets and using any noise reducing devices supplied. The lowest radiator, or one of the radiators fitted on the ground floor shall be fitted with a drain tail 15mm min outlet or similar suitably located to allow for flushing and future draining of the system.

All brackets and supports must be secured to the wall with suitable fixings to ensure adequate support for each radiator. The Contractor must ensure that the background on to which radiators are to be securely fixed, is adequate to take the weight of each radiator and robust enough to accept the fixing devices.

All new or replacement radiators must be sized on the new design temperatures and shall be sized on a maximum adjustment factor of a 25oC mean water temperature difference, as per EN standard.

Radiator Positioning

The final exact location for each radiator within each room, will be agreed prior to installation. Following installation, the protective cover shall be replaced to protect the enamel finish during the remaining period before hand over. All solder flux residue must be removed, and pipework cleaned when cool immediately after soldering is complete. All areas (including hot press) where soldering is intended, must be properly protected from scorching using appropriate protection mats or cool gel liquid.

Radiator Valves

Myson 2-way thermostatic radiator valve, or equal approved fitted to each radiator (except for the radiator located in the same proximity of the room thermostat) this radiator shall be fitted with a lock-shield valve at both ends. All thermostatic radiator valves shall be fitted to the flow pipe in a vertical position.

Sealed System and Expansion Vessel

Where the existing system is a sealed type, the Contractor shall supply and install a filling loop and expansion vessel adjacent to the heat pump. The filling loop shall be a flexible stainless-steel hose with union connections at each end and incorporate a 0 - 4 bar pressure gauge, dual non-return valves and quarter-turn isolation valves. Any fill line fed from a boosted supply or any supply with inlet pressure greater than 1.3 Bar shall be fitted with a pressure reducing valve.

The Contractor must ensure that the expansion vessel is securely fixed to the wall and set at the correct initial cold fill pressure. The expansion vessel and filling loop must be connected to the system in accordance with the

manufacturer's requirements and be located in conveniently accessible positions to allow easy operation, setting, refilling and maintenance.

The make-up water for the heating system will in general be supplied from the incoming mains water pipework. The mains water supply pipework must incorporate a stopcock. On completion of the installation, and after the completion of satisfactory tests, the filling loop must be isolated and disconnected from the incoming mains water supply.

If the existing system is an open system or semi-sealed system, it should be converted to a sealed system as described above.

Heating Controls

The Contractor must ensure that the heating / DHW system controls systems fully comply with the requirements of the Building Regulations Technical Guidance Documents TGD 'L'.

The control systems must be configured to ensure that the heat pump does not operate or cycle when there is no demand for heating or domestic hot water. However, the strategy should ensure that cycling should be kept to a minimum to encourage optimum heat pump performance and efficiency.

All room thermostats to be installed in locations agreed with the Client prior to installation. The main room thermostat will normally be fitted in the hallway and should be in areas not affected by direct solar gain or adjacent radiators and be mounted at a height of 1,200 - 1,400mm above floor level in accordance with manufacturer's instructions.

The controls strategy should generally be configured on a DHW priority basis, with the system reverting to space heating once the DHW cylinder setpoint is satisfied. This can be achieved via a 3-way soft close valve arrangement, or preferably via a low-loss header arrangement with space heating and DHW primary circuits connected to the secondary side of the low loss header.

A third-party thermostat shall be installed to control the output of the heating system (radiators) in conjunction with thermostatic radiator valves. If the house is in excess of 100m², then the living areas must be controlled separately from the bedrooms.

All thermostats and programmers shall be hardwired only. All thermostats and programmers shall be mains powered, and no batteries shall be required for any thermostats or programmers. Programmers shall have the ability to

allow for setback of temperatures like a Heatmister Neo V2 stat or similar, this is to be agreed with SDCC staff.

The heat pump operation must be automatically interlocked to ensure that it switches off when there is no time or temperature requirement for heating or domestic hot water.

Space heating shall be set to operate at a particular temperature / weather compensation setting, preferably with a maximum flow temperature of 45°C (depending on radiator sizes in the dwelling).

Domestic hot water shall be set to operate at a typical cylinder setpoint of 50°C with a 10°C hysteresis i.e. the heat pump will heat the cylinder to 50°C then allow it to cool to 40°C before switching over the DHW circuit again.

All items of control equipment, programmer, thermostats, and motorised valves must be wired in accordance with the manufacturer's specific control equipment requirements and instructions to suit the configuration of the particular system.

The heat pump system shall be capable of being connected and operated through the internet via mobile phone, pc or laptop. Remote access would be preferred where presence and quality of Wi-Fi allows.

Pipework

Retrofits:

The pipework connecting to the heat pump, cylinder and filling loop shall be copper tube to I.S.238 (B.S.2871). Where copper pipework has to run in a concrete slab or in a chase in a floor it shall be insulated with approved flexible polyethylene pipe insulation and further covered with polyisobutylene and shall have a minimum cover of 50mm from the top of the insulation. All joints on the insulation and covering shall be tight and taped. Care should be taken to ensure no gaps are left. At no point shall the copper come in contact with concrete, plaster or masonry. Copper pipework under floor joists or floorboards shall be insulated along its full length with approved flexible polyethylene pipe insulation between joists to prevent any contact with electrical wiring.

Where pipes are buried or concealed under floors the heating contractor shall plan to ensure that the minimum possible number of joints is made, and pipes shall be joined by use of pre-soldered capillary fittings. All soldered joints shall be cleaned of all excess flux residues when cool as the installation progress.

ALL PIPEWORK TO BE BURIED SHALL BE PRESSURE TESTED SEPARATELY TO THE REST OF THE SYSTEM. IT SHALL BE SUBJECT TO A TEST 3bar AND REMAIN DROP TIGHT FOR A PERIOD OF 2 HOURS.

Radiator circuit flow and return pipework must be a minimum of 22mm diameter to the second last radiator to include pipe drops to accommodate ground floor radiators.

Pipe runs in as far as is practicable, shall be either horizontal or vertical. All pipework shall be supported clear of the supporting surface. Pipe clips screw fixed pipework brackets as designed for use with copper tube to I.S. 238 shall be used throughout and shall be placed at spaces no exceeding those referred in Section 2.4.10 below. Pipe clips shall be of a type, which will ensure no contact between the pipe and the surrounding surface. Single nail clips are not acceptable for this purpose.

All components fitted to the heating system should be accessible for maintenance and replacement purposes.

Pipework for New Heating Systems:

All heating pipework installed shall be copper pipework I.S.238 (B.S.2871) using solder fittings or pre-approved ALUPEX 'Pipe-in-Pipe' using hydraulic crimp / compression type fittings secured to the pipework using a press tool, connecting the radiators to dedicated manifolds located in an appropriate position on the ground floor and hot-press on the 1st floor (if applicable) to include independent isolation valves for all primary circuit connections, and all branch points. Isolation valves, in all cases, shall be ball type, lever action units clearly indicating the status of the valve. **Push type fittings will not be acceptable for this purpose in any part of the installation.**

- The Contractor shall be responsible to ensure that the full installation in its entirety is coordinated in advance with other contractors and trades to avoid clashing with other services.
- Each pipe connecting the radiators shall be contained within a sleeve from the manifold and shall be continuous without any joints allowing for easy withdrawal and replacement. The Contractor can be requested to demonstrate the removal and re-instatement of the PEX pipework at selected locations.
- All pipework passing through walls or concrete floors shall be sleeved.
- All pipework installations shall be in accordance with best practice, the relevant methods and appropriate I.S. and B.S. standards and Codes of Practice.

- The heating circuit shall be a two-piped system using copper pipework to I.S. 283 I.S.EN 1254-1, I.S. EN 1254-2, I.S. EN 1254-3, I.S. EN 1254-4 and I.S. EN 1254-5. Lead free solder and flux shall be used for copper jointing.
- To avoid reverse circulation all radiator returns should be commoned together before the final connection to the boiler and the DHW return connection should be positioned as the last connection on the return pipe to the boiler.

Pipework insulation

The Contractor shall allow for the removal of all existing pipework insulation around the boiler and other locations depending on the system type being installed.

New thermal insulation must be applied to all new and existing heating pipework, the only exception being where the pipework within the space or room can contribute to the useful heat of that area.

All heating services pipework shall be insulated throughout all concealed runs as appropriate to the duty in accordance with current good practice for the purposes of energy conservation and prevention of heat transfer and condensation. Pipework installations shall be insulated with close cell Armaflex insulation, standard BS: 3958 Part 4, Class O.

All pipework in ducts shall be properly lagged along their full length with approved flexible polyethylene pipe insulation and have a wall thickness of at least 13mm.

All piping in attic spaces is to be lagged with approved flexible polyethylene pipe insulation having a minimum wall thickness of 22mm. Pipes, all joints fully sealed with a suitable insulating tape. Insulation should be neatly fitted with formed mitred joints at elbows and tees and should cover all valves and fittings. The manufacturer's approved adhesives should be used on all butt and seam joints.

Pipework run externally shall be encased and routed as per refrigeration copper. The thickness of the insulation on the external pipework shall be as per above and requirements of TGD-L.

All pipework insulation external or in direct sunlight shall be UV rated, weather resistant and protected from damage by vermin/birds.

All valves and fittings are to be insulated as per adjacent pipe work.

All insulating material used shall comply fully with the requirements of EN5442 & BS 476, Parts 6 & 7.

Refrigeration pipework insulation shall have a thermal conductivity of 0.035W/mK and be to the thickness as follows:

- Pipe outer diameter $\leq 5/8''$ & run under 5m; Insulation thickness = 10mm minimum
- Pipe outer diameter $\leq 5/8''$ & run over 5m; Insulation thickness = Pipe outer diameter
- Pipe outer diameter $\geq 5/8''$, any length; Insulation Thickness = Pipe outer diameter

All refrigeration pipework insulation external or in direct sunlight shall be UV rated and weather resistant and protected from damage by vermin/birds.

Safety Valve

- The heating safety valve discharge pipe shall be of 15mm copper tube, and the discharge should terminate at low level to a visible position outside the building facing downwards. The discharge pipe from the safety valve should incorporate an inline tundish to allow visual indication and observation of the safety valve operation. The tundish must always be fitted inside the house and never externally or in areas at risk of freezing.
- The heating system to be fitted with a heating safety valve, either pressure only or temperature and pressure type.
- The DHW system to be fitted with a temperature and pressure combined safety valve on the cylinder.
- All pressurised cold-water supplies shall have a pressure relief valve fitted on the inlet.

Automatic Bypass

- An automatic bypass valve shall be fitted between the primary flow and return pipework (or as required by heat manufacture) and set to give the minimum flow rate required for the correct operation of the heat pump when all other circuits are closed. The bypass shall be fitted in an accessible position for setting and maintenance purposes.
- Alternatively, an approved low loss header should be installed, complete with drain-off valve and air vent, to guarantee adequate flow through the heat pump.
-

Magnetic Filtration Unit

A magnetic filter unit shall be installed on the primary heat pump circulation pipework in a convenient position on the return pipework, near the heat pump, and in accordance with manufacturer's instructions. The unit must be easily accessible for maintenance. The unit must also incorporate integral isolation valves on the inlet and outlet

connections.

Condense Discharge

- A plastic drainpipe must be installed to discharge the condense defrost water from the heat pump evaporator to the disposal discharge point. A plastic overflow pipe with a fall of at least 2.5 degrees, fixed with brackets spaced at 0.5m intervals, shall be used to discharge the condense water from the heat pump.
- Where possible the condense water should discharge into an internal sink waste pipe, waste stack or soil stack. A condense drain should not discharge into copper pipe or cast-iron water pipe.
- Where the condense pipe terminates outside, the pipework size will increase to 32mm in diameter and terminate to a nearby gully. The pipe run should be kept as short as possible, ideally less than 3m.
- Where a gully is not available an external soak pit (MacAlpine) will be provided complying with the required heat pump manufacturer specifications, and SEAI requirements.

Valves & Stopcocks

- Isolation and regulating valves, drain cocks, stop cocks and safety valves, shall be installed in the positions noted in this specification, and in locations as required to comply with good practice guidelines.
- Isolation valves should be fitted on the primary pipe work at the outdoor unit to allow for removal/isolation of unit.
- Drain cocks shall be provided on all low points of the system and as noted in this specification. Drain cocks shall be installed complete with hose union and blank cap secured to the body of the valve and must be in easily accessible locations to allow maintenance.

Air Vents

Automatic air vents must be installed on all separate sections of high-level pipework. Each vent must be complete with an isolation valve. All vents and valves must be adequately supported. They must have a gradual rise and be accessible for maintenance purposes.

Brackets & Supports

All copper pipework must be adequately supported using brass or copper brackets securely fixed to the wall or ceiling with non-ferrous fixing devices, galvanised steel brackets must have a suitable rubber gasket to prevent direct contact between pipe work and galvanised steel bracket. Plastic brackets or galvanised steel bands shall not be used.

Pipework shall be supported at a change in direction unless other agreed with the

Client. Pipework supports shall be arranged as near as possible to the joints, and the distance between pipe supports measured along straight runs shall not exceed the following:

Pipe Bore (mm) Support Centres (m)

Flushing of system

After completion of all the distribution pipework the Contractor must flush out the heating pipework and radiators with a suitable cleanser. All items of equipment such as the new air to water heat pump, circulating pump, hot water heater and magnetic system cleaner installed on the system pipework, must be removed or isolated during the pipework flushing activity.

A written log detailing the chemical(s) used for this activity must be included in the record documentation. All dirty water removed from the system after the flushing process, must be properly disposed of safely and in accordance with good practice.

System water treatment

When the flushing is completed and the flushing liquid completely drained down, the system must then be filled with clean water treated with the correct concentration of corrosion inhibitor to protect against scale and corrosion. The corrosion inhibitor must be as recommended by the heat pump manufacturer, be suitable for systems with mixed metals, non-hazardous, non-toxic and environmentally friendly.

The correct inhibitor concentration must be checked with an appropriate test kit to ensure that the minimum level for proper protection has been achieved and is in full compliance with the requirements of the heat pump manufacturer. A written log of this result and the chemical(s) used, must be included in the record documentation.

A post installation water quality test report shall be submitted as part of each installation.

Testing and commissioning

The heat pumps shall be commissioned according to the manufacturer's instructions. The Client shall be informed in good time as to when the commissioning will take place.

- The Contractor must test and record the electrical usage and operation parameters of the heat pump during commissioning in heating and hot water mode separately when on full load.
- The Contractor shall ensure that the air to water heat pumps is weather compensated using an external sensor directly connected to the heat pump controls. The weather compensated control must be commissioned at the same time the air to water heat pump is being commissioned.
- The pipework circulation circuits must be of a two-pipe configuration with all heat emitter flow rates balanced to provide their correct output and temperature drop.
- The air to water heat pump water flow rate must also be set to ensure a temperature differential as required by the manufacturer.
- All actual settings input on the air to water heat pump are to be fully recorded and submitted i.e. temperature bands, hot water hysteresis, temperatures, times etc.
- The completed heating circuit pipework must be pneumatically or hydraulically pressure tested to 3.0 bar for a period of at least 2 hours. No appreciable drop in pressure must be observed at the conclusion of each test.
- All pressure tests must be undertaken and satisfactorily completed before the full operational commissioning of the system takes place. The system shall be flushed prior to being pressure tested.
- Correct operation of the programmer, motorised valves, room thermostat, cylinder thermostat and all T.R.V.s shall be checked.
- Expansion vessel charge shall be adjusted to suit the static head pressure available.
- Heat recovery time for the DHW cylinder shall be checked.
- Correct operation and balance of all radiators shall be checked for correct operation and heat on full load.
- When all the necessary tests are completed, all commissioning has taken place, and the system is made operational and it is operating in accordance with the specified parameters, then the normal operation of the system and controls, where requested, must be fully demonstrated to the Client.
- Submit relevant documentation to the Client showing test results.

Testing heating system and balancing radiators

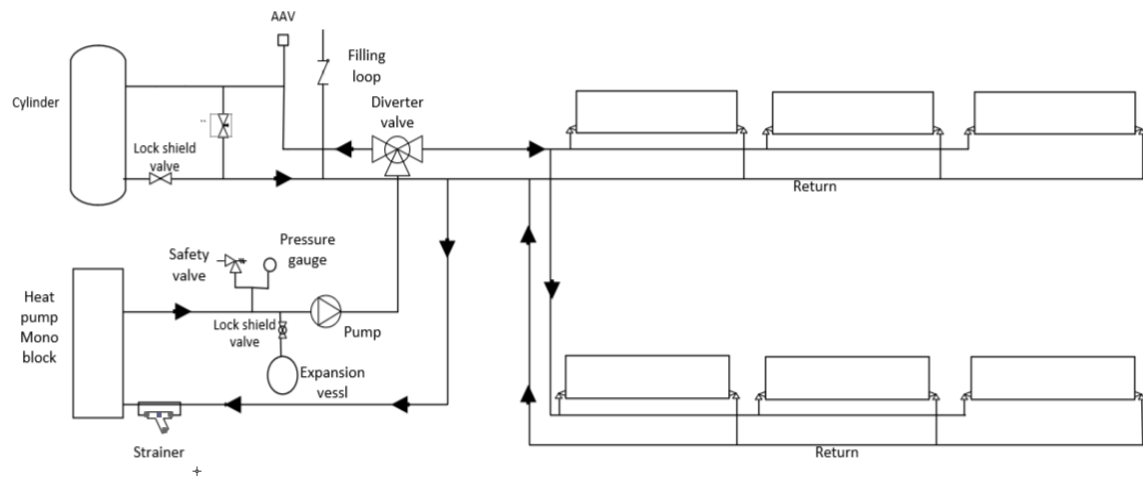
- Ensure all external controls and programmers are calling for heat.

- Fully open all radiator valves on the heating circuit and vent as required.
- Balance the radiators as required to give the required system differential.

Testing domestic hot water

- Open hot water taps and check that the temperature and flow are compliant with the relevant regulations and with the settings on the boiler and cylinder.
- Labelling and identification
- Labelling and identification must be completed in accordance with the following requirements. The Contractor must label all isolation and control valves with a numbered label. A printed schedule of all valves, and their function must be fixed, in a prominent position, to the wall or door of the heat pump compartment. The schedule must be enclosed in a protective plastic cover and a copy also included in the submission of the recorded documentation.
- The labelling must also include the relevant Irish and European statutory equipment labelling requirements such as the ErP labels on heat pump, cylinders, etc. ErP system labels and information shall be supplied fully completed by the contractor for each individual installation.
- Each heat pump shall have an identification sticker affixed to the front casing of the indoor and outdoor unit stating the installation date and name of contractor.
- As part of the performance specification and performance-based equipment schedules reference should be made to the requirement that equipment proposed is either Triple E Registered or satisfies the same criteria required for Triple E Registration and evidence of same should be provided prior to installation stage to verify same.

Diagram



3.3 Appendix C - SDCC Electrical Specification for Energy Retrofit

SDCC Electrical Specification for Energy Retrofit – Heat Pump Program

The contractor must ensure that the addition of the heat pump system does not impair the safety of the existing electrical installation. Additional works may be required to the existing electrical installation to facilitate the installation of the heat pump.

All wiring associated with the heat pump installation and any other electrical works to be carried out by a registered electrical contractor under the Safe Electric Scheme.

All wiring to be in compliance with the National Rules for Electrical Installations I.S.10101:2020

Electrical completion certificate is required for works carried out.

Surface wiring to be kept to a minimum but where necessary to be encased in appropriately sized PVC trunking. Where PVC trunking is used correct manufacture's bends are to be used and not handmade mitred joints in the installation of same.

Mini trunking is to be screwed fixed to walls and not rely on self-adhesive backing which is on certain types of trunkings.

External wiring to be mechanically protected. Following options are acceptable – SWA cable, NYMJ cable sleeved in metal flexible conduit or Metal trunking. Correct glands to be used for termination to isolators and heat pump equipment. Cables to be clipped or cleated where required. Cable entry to outdoor heat pump unit to be as per manufacturers guidelines.

Isolation of outdoor unit to be accessible and be of the correct IP rating

Earthing

Hot press – 10sq.mm earth to be ran to hot press from consumer unit earth terminal and all pipes cross bonded in 10sq.mm earth. All connections to bonding straps to be either via a crimped lugged connection or unbroken continuous connection across bonding straps. Cross bonding to be kept below any shelving fitted to hot press.

External unit -10sq.mm earth to be ran to outdoor unit from consumer unit earth terminal and the casing, pipe work or any structural metal supports or cages cross bonded in 10sq.mm earth. All connections to bonding straps or earth terminals to be via a crimped lugged connection.

The Contractor must allow for the removal of all the existing electrical supplies to the existing heating / hot water equipment and ancillary equipment. Flush back boxes where controls may have been removed to be blanked off.

Hot press – If there is an Immersion group fitted to the new hot water cylinder it will need to have local isolation which is clearly labelled Immersion & Do Not Switch Off. This is to prevent tenants turning off the supply to immersion group and preventing the requirement for boosting water temperature on a regular basis as controlled by the Heat pump to avoid Legionnaires contamination of the stored water supply.

Existing consumer unit may need to be replaced to allow for the additional protective devices required and the increased electrical load. Meter tails between the consumer unit and ESB Networks meter need to be upgraded as part of this work. Main earthing will also need to be upgraded as part of this work to comply with I.S.10101:2020 including a 10sq.mm earth to earth electrode. Note the replacement consumer unit will need to be installed at the new regulation height unless existing wiring is not long enough to be rerouted to this position.

If the existing consumer unit is to be replaced the full cost is to be included on any tender application, including up grading of meter tails between ESB meter and consumer unit, Main 63amp MCB isolator in suitable enclosure fitted in ESB meter cabinet, ESB reconnection fee, Certification of same.

The Builder/Electrical sub-contractor is responsible for all the correspondence with Safe Electric and the ESB Networks to ensure the reconnection of supply. Payment of the reconnection fee is to be paid by Builder directly to ESB Networks. The installation is to be left on a temporary connection to old meter tails in the ESB meter cabinet to keep power on at the address and the Electrical Contractor will need to revisit the house after ESB Networks confirm reconnection of new meter tails to carry out post connection tests on the installation In order to complete the certification process.

If the existing meter tails are adequately sized (16sq.mm) but the consumer unit does not have the capacity for additional protective devices a separate enclosure/sub consumer unit can be installed fed off the main consumer unit. The new sub board to be mounted at the new regulation height. (Max 2.15 meters from FFL to top of protective device on highest rail of consumer unit)

All new wiring/circuits to be clearly labelled at consumer unit/Sub consumer unit.

Where RCBO's are installed, a label is to be attached to consumer units with instruction to carry out a three-monthly trip test on RCBO devices.

Energy Monitor

A din rail mounted two pole energy meter is to be installed in the consumer unit/sub consumer unit to monitor the energy consumption of the heat pump. The energy monitor has to be rated for the full load current of the heat pump and any other ancillary equipment that is part of the heat pump installation

Prepay budget meters (Prepay Power/Pinergy/ Electric Ireland)

Where consumer units are being replaced and there is a prepay budget meter in place the utility provider is to be notified of the removal of their meter by the tenant (Utility account holder). The prepay budget meter is to be disconnected by the electrical Contractor to facilitate the replacing of existing consumer unit. The utility provider is to be notified when the new consumer unit is in place for them (provider) to organise reconnection of the budget meter

Wiring /Schematic drawings to be made available for heat pump wiring.

Samples/submittals to be made available for material & equipment to be installed in the heat pump installation, ventilation and any other electrical retrofit works for approval.

Examples:

- Cable types and show evidence of compliance with IS10101:2020 and CE approved.
- Consumer unit
- PVC trunking type and associated fittings/bends
- Time clocks
- Programmer's
- Room stats
- Energy Monitor
- Extract fans if required for bathroom & Kitchen.
- Demand Control Ventilation (if required)
- Insulation support boxes where down lighters are present on attic ceiling
- Material/split flexible conduit used for sleeving of meter tails to prevent contact with thermo bead

- Material used for maintaining integrity of ESB meter cabinet if additional holes are made in the cabinet to facilitate the sleeving of meter tails in wall cavity to be pumped (Intumescent board & sealants)

Ventilation

If extract fans are included in scope of works for kitchens & bathrooms, it can be decided on site with SDCC Electrical Inspector / SDCC Housing Engineer as to how they are wired, and type of fans required

Demand Control Ventilation

Central fan unit to be wired on a separate circuit back to the consumer unit and protected as per manufacturer's instructions/wiring rules

Local isolation is required for the fan unit mounted above any insulation installed in clear sight. A switched spur with neon indicator is to be used as isolation with the appropriate sized fuse fitted to the switched spur rated for the design current of ventilation unit installed.

All control wiring from the central fan unit to exhaust ceiling/wall vents for humidity & presence detection to be extra low voltage (ELV – voltage not exceeding 50 volts AC or 120 volts DC)

Insulation works

Insulation support boxes are to be installed in attic space where there are down lighters present to prevent insulation being laid directly over light fittings and causing a fire hazard

Where cavity walls are being pumped with Thermobeads there should be no contact between the Thermobeads and adhesive used to bond beads and PVC insulated electrical cables. If the meter tails from the ESB meter cabinet to the position of consumer unit are located in the cavity wall to be pumped, the meter tails are to be sleeved in split flexible conduit to protect the PVC cable from reaction to beading & adhesive used. This is in guidance with the Irish Agreement Board IAB

Split flexible conduit can be fitted without disconnection of cables from the ESB meter but care is required not to put strain on termination of cables. If there are any holes made in the ESB meter cabinet to facilitate the sleeving of cables the cabinet is to be repaired using suitable material to retain the integrity of the cabinet. Intumescent rated board & sealants to be used to repair the cabinets

End of Document