



Fergal Coughlan
Chartered Engineer

RAHEEN GROUP WATER SCHEME

Watermain Replacement Works

VOLUME A-WORKS REQUIREMENTS

Client	Raheen Group Water Scheme
Supervising Engineer	Fergal Coughlan Chartered Engineer Ltd
Scheme Length	Approximately 2.3 km
Principal Watermain	PE100 DN 110 SDR17
Road Environment	R463 Regional Road / local interfaces as shown on Drawings
Document Status	Tender
Revision / Date	P01 / September 2026

Document Control

Revision	Date	Status	Prepared by
P01	September 2026	Tender	Fergal Coughlan Chartered Engineer Ltd
Project	Raheen GWS Watermain Replacement	Client	Raheen GWS
Principal Main	PE100 DN 110 SDR17	Approx. Length	2.3 km

The Works Requirements shall be read with the Contract Drawings, Bill of Quantities(Pricing Document), Preliminary Safety and Health Plan, Road Opening Licence(when approved- to be applied for by Main appointed contractor), approved traffic management proposals and all other Contract documents. The Contractor shall notify the Employer's Representative of any ambiguity or conflict before proceeding.

Principal Reference Framework

Subject	Reference Basis
Uisce Éireann	Water Infrastructure Standard Details CDS-5020-01 Rev 05 and Code of Practice for Water Infrastructure CDS-5020-03 Rev 03, or the project-applicable revision current at tender/connection stage.
Pressure Pipework	IS EN 12201 series for PE pressure systems; IS EN 805 for water supply systems and components outside buildings.
Valves / Appurtenances	IS EN 1074 series; potable-water approvals and current Uisce Éireann asset specifications/standard details.
Concrete / Masonry	IS EN 206 and applicable Irish provisions; IS EN 771 series, IS EN 998-2 and related Eurocodes where relevant.
Covers / Frames	IS EN 124 series and Uisce Éireann loading/location requirements.
Meters	IS EN ISO 4064 series where applicable and project/GWS/Uisce Éireann meter-reading requirements.
Road/footpath/verge Reinstatement	Clare County Council Road Opening Licence; Guidelines for Managing Openings in Public Roads (Purple Book); applicable current TII Specification for Road Works Series and also pricing document.
Traffic Management	Current Traffic Signs Manual Chapter 8 and approved site-specific temporary traffic management plan.
Health & Safety	Safety, Health and Welfare at Work Act 2005; Safety, Health and Welfare at Work (Construction) Regulations 2013 as amended.
Fusion Jointing	Applicable Water Industry Specifications including WIS 4-32-08 for PE fusion jointing and WIS 4-32-16 for butt-fusion machines, where specified/accepted.

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SECTION 1 – GENERAL

The general clauses below apply throughout the Works and are intended to be read together with the project-specific drawings, BOQ(Pricing Document) and contractual requirements.

1.1 SCOPE OF WORKS

1.1.1 The Contract comprises the replacement and upgrading of approximately 2.3 km of the Raheen Group Water Scheme distribution network, including the supply and installation of PE100 DN 110 SDR17 pressure watermain/booster pumps(and associated works) along the alignments shown on the Contract Drawings.

1.1.2 The Works include excavation, pipe bedding, pipe laying, butt-fusion/electrofusion jointing, valves, tees, bends, reducers, flange adaptors, end caps, air-valve arrangements, scour/washout arrangements, chambers, marker systems, service connections, boundary boxes, domestic meters, domestic PRVs where scheduled and all fittings and specials necessary for a complete operational system.

1.1.3 The Works also include connection to existing live infrastructure, temporary arrangements required to maintain supply, shutdown planning, flushing, pressure testing, disinfection, water-quality sampling, commissioning, reinstatement and all as-built, quality and Safety File documentation.

1.1.4 The Contract Drawings and Bill of Quantities(pricing document) include a booster-pump/pressure-control installation, the Contractor shall include associated civil, mechanical, electrical, control, bypass, commissioning and integration works.

1.2 SITES AND WAYLEAVES

1.2.1 The Site comprises the public-road corridor, verges, footpaths, accesses, private lands and other areas within which the Works are to be carried out. The Contractor shall confine operations to approved working areas and shall not enter private lands outside the agreed limits without permission.

1.2.2 Watermains shall be installed to the lines and levels shown on the Contract Drawings unless an alternative is instructed or approved. Any proposed local adjustment to avoid services, structures or unsuitable ground shall be agreed before installation and shall not impose any additional cost to the contracting authority.

1.2.3 The Works shall proceed in controlled phases. Each phase shall be made safe, backfilled and temporarily or permanently reinstated as required before the work zone is moved forward, so that disruption and the extent of open excavation are minimised.

1.2.4 The Contractor shall protect boundaries, walls, gates, hedges, drains, entrances, buildings and other features adjoining the Works and shall make good any damage attributable to the construction activities at their own expense.

1.2.5 Any wayleave conditions, landowner agreements, road-opening conditions or access restrictions supplied with the Contract shall be binding on the Contractor.

1.3 NOISE SUPPRESSION

1.3.1 Construction noise shall be controlled so that it does not create unreasonable nuisance at dwellings, businesses, healthcare/community facilities or other noise-sensitive receptors along the route.

1.3.2 Plant shall be modern, properly maintained and fitted with effective silencers. Engines shall not idle unnecessarily, compressors/generators shall be acoustically screened where required, and reversing alarms shall be selected/managed to reduce nuisance while maintaining safety.

1.3.3 Normal working hours shall be those stated in the Contract, Road Opening Licence and approved Traffic Management Plan. Work outside those hours shall require prior approval and may require additional noise-control measures.

1.3.4 Where noise-sensitive works are unavoidable, the Contractor shall notify affected occupiers, select low-noise methods where practicable and monitor noise if requested by the Employer's Representative or statutory authority.

1.3.5 BS 5228-1 and BS 5228-2, or equivalent current guidance, shall be used as the basis for construction noise and vibration management where applicable.

1.4 DUST CONTROL / SPILLAGES

1.4.1 The Contractor shall control dust, mud and spillages arising from excavation, cutting, backfilling, reinstatement and material handling so as to prevent nuisance, damage and pollution.

1.4.2 Water suppression, dust extraction, covering of loads, wheel cleaning and prompt road sweeping shall be used where necessary. Dry sweeping that redistributes fine dust shall be avoided.

1.4.3 All fuel, oils, chemicals and chlorination products shall be stored in suitable containers within controlled areas. Spill kits shall be immediately available and personnel shall be trained in their use.

1.4.4 Concrete washout, cementitious water, chlorinated water, silty water or hydrocarbon-contaminated water shall not be discharged to surface-water systems or watercourses without an approved method.

1.4.5 Any environmental incident shall be contained, reported promptly and managed in accordance with the Contractor's emergency/environmental procedures.

1.5 SAW CUT ROADS

1.5.1 Existing bituminous, concrete and paved surfaces shall be saw-cut or otherwise neatly cut to the approved limits (set out by ROL and Uisce Eireann/Local Authority requirements before excavation. The cut shall produce a straight sound edge suitable for subsequent reinstatement.

1.5.2 The Contractor shall avoid excessive cutting or damage outside the approved trench/reinstatement width. Unsound edges that break away shall be cut back to competent material at the Contractor's cost unless otherwise directed.

1.5.3 Cutting slurry and arisings shall be contained and removed. Dry cutting likely to generate respirable silica dust shall be controlled by wet cutting or suitable extraction.

1.5.4 Final saw-cut widths for permanent reinstatement shall comply with the Road Opening Licence, approved reinstatement drawings and the applicable requirements for longitudinal and transverse openings.

1.6 LIGHTING

1.6.1 Warning lights, task lighting and temporary road lighting shall be provided where necessary for safety, traffic management and protection of excavations.

1.6.2 Lighting shall not dazzle road users or create nuisance to nearby residents. Temporary lighting equipment shall be robust, weather resistant and located so that cables do not create trip hazards or obstruct traffic routes.

1.6.3 Excavations or obstructions left in place outside working hours shall be adequately signed, barriered and illuminated in accordance with the approved traffic management arrangement.

1.7 WATCHMAN

1.7.1 The Contractor shall provide competent supervision and, where required by the risk assessment or traffic-management arrangement, watchmen or attendants outside normal working hours.

1.7.2 Watchmen shall be capable of responding to displaced barriers, temporary-surface defects, flooding, unauthorised access and other foreseeable conditions affecting public safety.

1.7.3 Use of a watchman does not reduce the Contractor's obligation to leave every work area intrinsically safe and securely protected.

1.8 TRAFFIC CONTROL

1.8.1 The Contractor shall prepare, obtain approval for and implement a site-specific temporary Traffic Management Plan before occupying the public road. It shall comply with the current Traffic Signs Manual Chapter 8, the Road Opening Licence and Clare County Council requirements.

1.8.2 Traffic management shall address approach speeds, visibility, work-zone length, lane widths, tapers, cones, barriers, temporary signals or Stop/Go control, pedestrian routes, cycle movements, property accesses, plant entry/exit, deliveries and emergency access.

1.8.3 Where two-way traffic cannot be maintained safely, alternating one-way operation shall be used only with the approval of the relevant road authority and Employer's Representative. Temporary signals shall be configured and inspected by competent personnel.

1.8.4 Traffic-management equipment shall be inspected at the start of each shift and after significant weather or site changes. Damaged, dirty or displaced signs and barriers shall be corrected immediately.

1.8.5 The Contractor shall coordinate with Gardai, Clare County Council, local residents, businesses and other stakeholders where required and shall provide advance notification of restrictions likely to cause material disruption.

1.8.6 The R463 is a regional road and shall be treated as a higher-risk live-traffic environment. The Contractor shall select work-zone arrangements and plant movements accordingly.

1.9 ACCESS TO FRONTAGES

1.9.1 Access to dwellings, farms, businesses, community facilities and side roads shall be maintained so far as reasonably practicable.

1.9.2 Before temporarily restricting any frontage, the Contractor shall provide reasonable notice to the affected occupier and agree a suitable alternative or time window for access.

1.9.3 Temporary ramps, plates or crossings over excavations shall be designed for the loads imposed, securely fixed and maintained. Unauthorised improvised bridging of trenches is prohibited.

1.9.4 Pedestrian access shall be kept clear, stable and suitable for vulnerable users. Where a footpath is closed, a safe signed diversion shall be provided.

1.10 CLEANLINESS OF SITE

1.10.1 The Contractor shall keep the working area orderly and shall remove loose stone, spoil, mud, pipe offcuts, packaging and debris as the Works progress.

1.10.2 Road surfaces shall be swept as often as necessary to maintain safe skid resistance and prevent nuisance. Drainage gullies shall not be allowed to become blocked by construction material.

1.10.3 At the end of each shift, plant and materials shall be stored safely within approved areas and no item shall obstruct sight lines, traffic signs, private entrances or pedestrian routes.

1.11 PUMPING

1.11.1 Dewatering pumps shall be sized and arranged to maintain a stable formation and safe excavation. Pumps shall have sufficient standby capacity where failure could endanger the Works or public safety.

1.11.2 Discharge water shall be managed to prevent erosion, flooding, silting, pollution or nuisance. Sediment control shall be provided where necessary.

1.11.3 Noise from pumps and generators shall comply with Clause 1.3. Out-of-hours pumping shall use suitably quiet equipment and generators positioned to minimise impact on sensitive receptors.

1.11.4 No pumping arrangement shall draw contaminated water into potable-water pipework or create a cross-connection with the public water system.

1.12 EXISTING SERVICES

1.12.1 The positions of existing watermains, services, sewers, drains, electricity cables, telecommunications ducts, private services and other utilities shown on Contract information are indicative only.

1.12.2 Before excavation the Contractor shall obtain current utility records, inspect the route, use appropriate locating equipment and mark detected services. Critical services and crossings shall be proved by safe trial holes before mechanical excavation.

1.12.3 Existing live watermains and service pipes shall be located and their material, diameter and depth confirmed at all tie-in and transfer locations sufficiently in advance to allow suitable fittings to be procured.

1.12.4 Mechanical excavation shall not proceed within an unsafe tolerance zone around a known or suspected service until its position has been verified and a suitable safe-dig method is in place.

1.12.5 The Contractor shall support and protect any exposed service and comply with the requirements of the relevant utility owner. Damage shall be reported immediately and made safe without delay.

1.13 CONSTRUCTION SEQUENCING

1.13.1 The Works shall be sequenced to maintain water supply, road/footpath access and public safety while keeping the extent of open trench and temporary reinstatement to a practical minimum.

1.13.2 The Contractor shall submit a programme showing work fronts, trial-hole/service-proving activities, main-laying sections, tie-ins, service transfers, testing, disinfection, sampling and reinstatement.

1.13.3 Existing watermain infrastructure shall remain operational until the replacement section has been successfully tested, disinfected, sampled and authorised for commissioning, except for approved temporary shutdowns. The existing footpath shall also be kept operational and contractor to ensure that diversions for safe use of footpath is maintained during course of works.

1.13.4 Shutdowns shall be grouped and planned to reduce customer disruption. The Contractor shall maintain contingency fittings, repair materials and pumps as appropriate.

1.14 DISPOSAL OF SPOIL

1.14.1 Surplus, unsuitable and contaminated spoil shall be removed to an appropriately authorised recovery/disposal facility in accordance with waste legislation.

1.14.2 The Contractor shall classify waste streams, maintain waste-transfer records and ensure carriers and facilities hold the necessary authorisations.

1.14.3 Suitable excavated material may only be reused where permitted by this Specification, the Road Opening Licence and the Employer's Representative. Material containing excessive clay, organics, debris, frozen material or oversize particles shall not be used where it would compromise compaction or asset performance.

1.15 LEVELS

1.15.1 All levels and coordinates shall be related to the project survey datum stated on the Contract Drawings. The Contractor shall verify control points before setting out. The levels shown are Malin Head(m).

1.15.2 Existing road, verge, drainage, culvert, bridge and property levels that affect the Works shall be checked on site before construction.

1.15.3 Where discrepancies are found between surveyed levels and Contract information, the Contractor shall notify the Employer's Representative before altering the pipe gradient or depth.

1.16 INSURANCE

1.16.1 Before commencing construction the Contractor shall maintain all insurances required by the Contract, including employer's liability, public liability, contractor's all-risks and any other cover required by the Employer or statutory authority/Local Authority. These are requested and quoted for in the tender pricing document.

1.16.2 Evidence of current policies and limits shall be provided when requested and shall remain valid for the duration of the Contractor's liabilities.

1.17 FAILURE OF CONTRACTOR TO CARRY OUT WORKS

1.17.1 Where the Contractor fails to execute or protect the Works in accordance with the Contract, the Employer may take such action as is permitted by the Contract Conditions after the required notices have been given.

1.17.2 Any emergency action taken by the Employer to protect public safety, maintain water supply, protect property or prevent environmental harm shall not relieve the Contractor of contractual responsibility where the need arose from the Contractor's default.

1.18 INSPECTION OF SITES

1.18.1 Tenderers shall inspect the route and acquaint themselves with road widths, traffic conditions, access constraints, visible services, ground features, watercourses, structures, properties and other conditions likely to affect construction.

1.18.2 The Contractor shall be deemed to have allowed for normal site constraints reasonably apparent from the Contract information and site inspection.

1.18.3 Where additional investigation is considered necessary for the Contractor's chosen methods, it shall be undertaken subject to approval and all required permissions. Extra payment will not be allowed for any difficulties due to site conditions encountered in construction of the scheme in accordance with the plans.

1.19 CONTRACTOR'S RESPONSIBILITY FOR CARRYING OUT THEIR RESPECTIVE CONTRACT'S

1.19.1 The Contractor remains responsible for construction means, methods, temporary works, sequencing, competence, supervision, workmanship and protection of the Works until handover.

1.19.2 Review, comment or inspection by the Employer's Representative does not transfer responsibility for the adequacy or safety of the Contractor's methods or temporary works.

1.19.3 The Contractor shall coordinate all subcontractors and suppliers and ensure that their work complies with this Specification and the approved quality and safety procedures.

1.20 STANDARD SPECIFICATION

1.20.1 References to Irish, European, British or Water Industry standards shall mean the current published edition applicable at the Contract Date unless a specific revision is stated for project consistency.

1.20.2 Products lawfully manufactured to an equivalent European or international standard may be proposed, provided the Contractor demonstrates equivalent performance, durability, potable-water suitability and certification. Written acceptance is required before use.

1.20.3 The principal project standards include Uisce Éireann CDS-5020-01 Rev 05 and CDS-5020-03 Rev 03 (or project-applicable current revisions), IS EN 12201, IS EN 805, IS EN 1074, IS EN 206, IS EN 124, IS EN ISO 4064 where relevant, applicable TII roadwork specifications, and current Irish health-and-safety legislation.

1.20.4 Where Uisce Éireann documents are used for a Group Water Scheme asset that is not intended for vesting, they shall be treated as the project technical benchmark to the extent identified by the Employer's Representative.

1.21 COMPLETION

1.21.1 Completion shall include full construction, testing, commissioning, final reinstatement, snag clearance, cleaning of the Site and submission of all required records.

1.21.2 The Contractor shall demonstrate that valves, hydrants, meters, PRVs, booster equipment and other appurtenances operate correctly and that chambers and covers are accessible and finish at correct levels.

1.21.3 Handover documentation shall include as-built drawings(in dxf format and to ITM/IG), coordinates, asset schedules, fusion records, test certificates, disinfection/water-quality records, material certificates, operation/maintenance information and Safety File information.

1.21.4 Any defects identified before the Completion Certificate shall be corrected promptly. Maintenance-period obligations remain as stated in the Contract.

1.22 QUALITY OF MATERIALS AND WORKMANSHIP

1.22.1 All materials shall be new, suitable for their intended duty and sourced from reputable manufacturers operating appropriate quality-management systems.

1.22.2 Workmanship shall be carried out by competent personnel using suitable plant, calibrated equipment and approved procedures. PE fusion jointing, pressure testing, electrical work, lifting and other specialist activities shall be carried out by suitably trained/qualified persons.

1.22.3 Material certificates, batch traceability, test records and technical submissions shall be retained as part of the quality plan.

1.22.4 The Employer's Representative may reject any work or material that is damaged, contaminated, incorrectly installed or not demonstrably compliant.

1.23 MAINTENANCE OF EXISTING SERVICES DURING CONSTRUCTION

1.23.1 Existing water, electricity, telecommunications, drainage and other services shall remain operational unless a planned interruption has been authorised.

1.23.2 The Contractor shall provide temporary support, protection, diversion or access as necessary and shall coordinate with the service owner before interfering with any asset.

1.23.3 Water-supply shutdowns shall follow an approved isolation and customer-notification plan. The Contractor shall not operate existing valves unless authorised.

1.23.4 Where an unplanned service interruption occurs, the Contractor shall immediately make the area safe, notify the Employer's Representative and service owner, and provide all assistance required to restore service.

1.24 SETTING OUT

1.24.1 The Contractor shall set out the Works from approved survey control and shall check chainages, offsets, service locations and levels before excavation.

1.24.2 Setting-out records shall be maintained and shall be made available for inspection. Any error arising from the Contractor's setting out shall be corrected at the Contractor's cost.

1.24.3 As-built coordinates and levels shall be captured progressively before assets are covered, particularly tees, bends, valves, service connections, chambers, crossings and changes in alignment.

1.25 DELIVERY OF MATERIALS

1.25.1 Materials shall be delivered in accordance with the programme and stored so as not to obstruct traffic, damage surfaces or create unsafe stacking.

1.25.2 PE pipe shall be transported and supported in accordance with the manufacturer's requirements. Pipe surfaces shall be protected from scoring, excessive deformation and contamination.

1.25.3 Valves, meters, fittings and electrofusion components shall be stored in clean dry conditions, with packaging retained until use where practicable.

1.25.4 Only materials intended for immediate installation shall be distributed along the road verge or work front.

1.26 PROTECTION OF WORKS

1.26.1 The Contractor shall fence, barrier, sign, illuminate and otherwise protect all excavations, materials and incomplete works.

1.26.2 Open pipe ends shall be capped. Installed fittings shall be protected against contamination, impact and unauthorised operation.

1.26.3 Temporary surfaces shall be maintained safe and even. Chambers and covers shall be secured and no open chamber shall be left unattended.

1.26.4 Damage to finished work caused by subsequent construction activities shall be repaired before handover.

1.27 PROPERTY CONNECTIONS TO WATERMAIN

1.27.1 The Contractor shall liaise with the Group Water Scheme and affected consumers before transferring existing connections. Advance notice shall state the anticipated work date, likely supply interruption and any action required from the property owner.

1.27.2 Each domestic connection shall be surveyed before transfer so that the existing service pipe material, size, approximate route and connection point are known. The Contractor shall maintain a range of approved transition fittings for PE, PVC and other existing materials likely to be encountered.

1.27.3 Boundary boxes shall be installed at approved locations in public space as close as practicable to the property boundary and generally outside the carriageway. Installation shall comply with the current Uisce Éireann standard detail applicable to the connection size.

1.27.4 Boundary boxes shall incorporate the specified stop-tap, frost protection and non-return valve and shall be suitable for installation of the specified domestic meter.

1.27.5 Water meters shall be installed and commissioned in accordance with Clause 3.13. Where a domestic PRV is required, it shall be installed in accordance with the current Uisce Éireann mini-PRV detail, including separate accessible chamber, upstream isolation and associated fittings.

1.27.6 The existing main shall remain live until the new main and service connection system have been tested, disinfected and accepted for service. Consumer interruptions shall be kept to the shortest practicable duration.

SECTION 2 – EXCAVATION, LAYING WATERMAINS AND BACKFILLING

2.1 CLASSIFICATION

2.1.1 For measurement and construction planning, excavation shall be treated as normal excavation, rock excavation, unsuitable/faulty ground and other categories identified in the Bill of Quantities or CESMM4 measurement rules.

2.1.2 Rock shall be measured and dealt with in accordance with the Contract measurement provisions. The Contractor shall keep records sufficient to verify quantities before material is covered or removed.

2.2 EXCAVATION FOR WATERMAINS

2.2.1 Watermain trenches shall be excavated by suitable plant, with hand excavation or reduced-mechanical methods used around services, structures and sensitive areas. The use of trenchers or directional drilling is prohibited.

2.2.2 All pavement edges shall be saw-cut. The trench width shall be sufficient for safe jointing, bedding and compaction but shall not be unnecessarily wide.

2.2.3 Unless otherwise shown or approved, the PE100 DN 110 main shall generally have not less than 900 mm cover measured to crown OR as shown on tender drawings. Road authority/Uisce Éireann requirements and service-separation requirements shall also be satisfied.

2.2.4 The Contractor shall limit open trench to a safe and manageable length having regard to traffic, weather, ground stability and property access. No excavation shall remain open unnecessarily.

2.2.5 Where reduced cover is unavoidable, no pipe shall be installed until the protection proposal has been approved. Protection may include increased pipe class, structural slab or other site-specific measure or as directed on drawings.

2.3 EXCAVATION FOR FOUNDATIONS AND TRENCHES

2.3.1 Excavations for chambers, structures and pipelines shall be formed to stable dimensions and supported or battered as necessary to protect workers, the public, adjacent pavements, services and structures.

2.3.2 The excavation bottom shall be trimmed to a firm uniform formation. Soft spots shall be removed and replaced with approved material or concrete as directed.

2.3.3 Safe access and egress shall be provided. Plant, spoil and materials shall be kept far enough from the edge to avoid overloading excavation sides.

2.3.4 Excavations shall be inspected by a competent person in accordance with statutory requirements and after events likely to affect stability.

2.4 ROCK EXCAVATION

2.4.1 Rock excavation shall, where practicable, be carried out by mechanical breaking or other non-explosive methods.

2.4.2 Rock fragments likely to damage the pipe shall be fully removed from the bedding zone. Additional bedding depth shall be provided where the trench formation comprises rock or hard projections.

2.4.3 Blasting is not anticipated and shall not be used without prior written approval, statutory permissions and a specialist design/risk assessment. Any blasting proposal shall address vibration, flyrock, public protection, nearby services and structures.

2.5 EXCAVATION IN FAULTY GROUND

2.5.1 Soft, yielding, disturbed or otherwise unsuitable formation shall be excavated until competent material is reached or to the depth instructed.

2.5.2 Replacement material shall comprise approved granular fill, lean-mix concrete or other engineered support suitable for the loading and pipe system. Geotextile separation may be required where fine soils could migrate into granular layers.

2.5.3 Where groundwater or running ground is present, the Contractor shall submit a stabilisation/dewatering proposal before pipe installation.

2.6 EXCAVATION BELOW LINE SHOWN

2.6.1 Excavation below the required formation caused by the Contractor shall be made good at the Contractor's expense with approved compacted granular material or concrete as directed.

2.6.2 Loose excavated material shall not be used to fill over-excavation beneath chambers, thrust/support structures or other locations requiring controlled support.

2.7 PROTECT ADJACENT PAVED SURFACES

2.7.1 Adjacent carriageways, footpaths, kerbs, channels, entrances and paved areas shall be protected from excavation damage, tracked-plant damage, spoil deposition and settlement.

2.7.2 Any damage outside the approved reinstatement limits caused by the Contractor shall be repaired to the satisfaction of the road authority/Employer's Representative.

2.7.3 Kerbs, paving units and other reusable items that require temporary removal shall be carefully lifted, stored and reinstated.

2.8 PROTECT LAWNS AND GARDENS

2.8.1 Where work affects lawns or gardens, topsoil/turf shall be stripped separately and protected for reuse.

2.8.2 Excavated subsoil shall not be placed directly on lawns or against walls without suitable protection.

2.8.3 Trees, hedges and ornamental features shall be avoided where practicable. Any unavoidable removal shall require prior agreement and shall be reinstated as specified.

2.9 PROTECT FIELDS AND OPEN AREAS

2.9.1 In fields and open areas, topsoil shall be stripped separately from subsoil and stored in low stable heaps so as to preserve its suitability for reinstatement.

2.9.2 Livestock boundaries and farm access shall be maintained. Temporary fencing shall be stock-proof where required.

2.9.3 Field drains and land drainage encountered during the Works shall be recorded and reinstated to full function.

2.10 TREE FELLING

2.10.1 Tree felling or significant pruning shall not be undertaken without approval and any required permissions.

2.10.2 Where roots are encountered, excavation methods shall minimise damage to retained trees. Roots shall not be indiscriminately torn by excavator buckets.

2.10.3 Any approved felling shall be carried out by competent personnel with suitable control of public access, traffic and falling material.

2.11 TEMPORARY REMOVAL OF EXCAVATED MATERIAL

2.11.1 Where excavated material cannot be safely stored adjacent to the trench, it shall be removed to an approved temporary stockpile or authorised facility.

2.11.2 Material proposed for reuse shall be protected from contamination and excessive wetting and shall be rehandled in a manner that preserves its suitability.

2.11.3 The Contractor shall allow for double handling where required by traffic and site constraints.

2.12 PROTECT EXISTING BUILDINGS AND SERVICES

2.12.1 Existing buildings, walls, foundations, poles, utilities and structures that could be affected by excavation shall be protected by suitable shoring, support or exclusion of surcharge loads.

2.12.2 Temporary supports to third-party assets shall be designed by a competent person where necessary.

2.12.3 No support shall be removed until the permanent Works are capable of safely carrying the relevant load.

2.13 TIMBERING EXCAVATION

2.13.1 Trench support shall be selected on the basis of actual soil conditions, groundwater, excavation depth, traffic surcharge and nearby structures.

2.13.2 Trench boxes, hydraulic shoring, sheet piles or other systems shall be installed and removed in accordance with a temporary works design and safe system of work.

2.13.3 Timbering may only be used where appropriate and competently designed. The Contractor remains responsible for excavation stability regardless of whether the Employer's Representative has inspected the support.

2.13.4 Voids outside shoring shall be filled so as to prevent settlement of adjacent pavement or ground.

2.14 PUMPING AND BALING

2.14.1 Excavations shall be kept sufficiently dry to permit safe working and to preserve the integrity of bedding, surround and structures.

2.14.2 Pumping shall not remove fines from the formation or cause ground loss beneath adjacent roads/structures. Well points, sumps, filters or settlement tanks shall be used where required.

2.14.3 Discharge shall not cause silting, erosion, flooding, nuisance or contamination. Permission shall be obtained before discharging to any drain or watercourse.

2.15 REMOVAL OF OFFENSIVE MATTER

2.15.1 Contaminated, foul-smelling or otherwise offensive material encountered during excavation shall be isolated and handled in a manner that protects workers and the public.

2.15.2 Such material shall not be stockpiled near dwellings, roads or watercourses. Disposal/recovery shall be to an appropriately authorised facility.

2.15.3 Where unexpected contamination is suspected, work shall stop locally and the Employer's Representative shall be notified.

2.16 LAY TEMPORARY DRAIN

2.16.1 Temporary drains, flumes or pipelines shall be provided where necessary to keep the works dry or maintain existing drainage.

2.16.2 Temporary drainage shall have adequate capacity, shall be protected from traffic damage and shall not create erosion or flooding at the outfall.

2.16.3 All temporary drainage works shall be removed and the affected area reinstated when no longer required.

2.17 PIPE LAYING AND JOINTING

2.17.1 PE100 DN 110 SDR17 watermain shall be laid to the approved line and level and in accordance with IS EN 12201, IS EN 805, Uisce Éireann requirements and the pipe manufacturer's installation instructions.

2.17.2 Before laying, every pipe length and fitting shall be checked for scoring, gouging, deformation, contamination or other damage. Damaged components shall be rejected or assessed by the manufacturer.

2.17.3 Pipe shall be lowered using non-damaging slings and shall not be dropped, dragged over sharp surfaces or forced into alignment.

2.17.4 Open ends shall be capped at all times when installation is not actively proceeding. The interior shall remain visibly clean.

2.17.5 Changes in direction by cold bending shall not exceed the manufacturer's minimum bend radius. Mechanical fittings or fabricated bends shall be used where necessary.

2.17.6 Valves and heavy fittings shall be independently supported so that their weight is not transferred improperly to PE pipework.

2.17.7 Marker mesh/tracer arrangements shall be installed continuously above the main in accordance with Uisce Éireann requirements and the Contract Drawings.

2.18 PIPE BEDDING

2.18.1 Pipe bedding shall consist of approved granular material compatible with PE pipe and free from sharp particles, organic matter, clay lumps and other deleterious material.

2.18.2 Unless a different approved detail applies, a minimum compacted bedding thickness of 100 mm shall be provided below the barrel, increased where required in rock or poor formation.

2.18.3 Bedding shall be shaped to provide uniform support to the pipe barrel and shall be carefully compacted, particularly beneath the haunches.

2.18.4 Joints and fittings shall be provided with adequate local space for assembly without creating point loads or leaving voids.

2.19 PIPE JOINTS

2.19.1 Butt-fusion and electrofusion jointing shall be carried out by trained and currently certified operatives using calibrated equipment compatible with the pipe/fitting manufacturer.

2.19.2 Fusion surfaces shall be protected from rain, dust, dirt, grease and moisture. Scraping/cleaning, alignment, clamping, heating and cooling times shall follow the approved procedure.

2.19.3 Fusion jointing shall comply with the applicable Water Industry Specification, including WIS 4-32-08, and the machine shall comply with the relevant specification such as WIS 4-32-16 where applicable.

2.19.4 Each fusion joint shall be uniquely identified and recorded. The joint log shall include operator, machine, date/time, pipe/fitting details, fusion parameters and location with GPS coordinate reference to ITM.

2.19.5 Electrofusion fittings shall remain clamped for the full manufacturer-specified cooling period and shall not be disturbed while cooling.

2.19.6 Mechanical and flanged connections shall be rated for the design and test pressure, use corrosion-resistant bolting/gaskets suitable for potable water, and be installed without excessive angular or axial load. All fittings to be approved by Uisce Éireann.

2.20 AIR VALVES

2.20.1 Air valves shall be installed at the locations shown on the Drawings and at additional approved high points where required.

2.20.2 Valve capacity and type shall suit filling, draining and normal air-release requirements and the design pressure.

2.20.3 Each air-valve installation shall include isolation, suitable fittings, chamber, cover and drainage/venting arrangement to the current Uisce Éireann standard detail.

2.20.4 Chambers shall be arranged so that surface water cannot enter the potable-water system and so that the valve can be removed for maintenance.

2.21 SCOUR VALVES

2.21.1 Scour/washout valves shall be installed at designated low points and other locations required to permit effective draining and flushing.

2.21.2 The washout branch, valve and chamber shall be sized and arranged as shown on the approved details.

2.21.3 Discharge shall be to an approved receiving location and shall not cause erosion, flooding, traffic hazard or pollution.

2.21.4 Chlorinated water shall be dechlorinated or otherwise managed before discharge where required by the approved disinfection method and environmental requirements.

2.22 EXTREME WEATHER CONDITIONS

2.22.1 Pipe laying, fusion jointing, concreting and reinstatement shall not proceed where weather conditions would compromise quality or safety.

2.22.2 Special precautions shall be taken in freezing conditions, heavy rain, high winds and very hot weather. Pipe expansion/contraction and fusion-equipment operating limits shall be considered.

2.22.3 Flooded or softened trench formation shall be restored to a suitable condition before bedding is placed.

2.23 RIVER, STREAM AND FIELD DRAIN CROSSINGS

2.23.1 Crossings of streams, watercourses and field drains shall be constructed to the site-specific details shown on the Contract Drawings and any environmental/landowner conditions.

2.23.2 The preferred method shall minimise disturbance to the channel and maintain flow. Ductile iron, sleeved PE, concrete protection or other measures may be used where detailed.

2.23.3 Field drains shall be supported during construction and reinstated with equivalent or better capacity. The location and details of reinstated drains shall be recorded.

2.23.4 Works in or near watercourses shall include silt control, spill prevention and suitable timing to minimise environmental impact.

2.24 BRIDGE AND CULVERT CROSSINGS

2.24.1 Bridge and culvert crossings shall be constructed only to approved site-specific details. The Contractor shall verify the structure, available cover, utility congestion and attachment/support locations before fabrication.

2.24.2 Current Uisce Éireann bridge-crossing details, including STD-W-33 where applicable, shall be used as the technical benchmark together with Clare County Council structural/roads requirements.

2.24.3 Where a pipe is carried externally or within a duct, supports, restraint, thermal movement, insulation/frost protection, access and corrosion resistance shall be addressed.

2.24.4 No drilling, fixing or loading of an existing bridge/culvert structure shall take place without approval.

2.25 RAILWAY CROSSINGS

2.25.1 No railway crossing is currently anticipated unless shown on the Contract Drawings.

2.25.2 Where a railway interface is identified, the Contractor shall comply fully with Iarnród Éireann requirements, permits, possession rules, buried-service controls and approved crossing design.

2.26 MARKER POSTS

2.26.1 Valves, hydrants, air valves, scour valves, bulk meters, PRVs and other buried appurtenances shall be identified by approved marker plates/posts where required.

2.26.2 Marker information shall include the asset type and relevant distance/diameter information in accordance with the applicable authority requirements.

2.26.3 Marker posts shall be located so they are visible, durable and do not obstruct traffic, visibility or private access.

2.27 SERVICE CONNECTIONS

2.27.1 Service connections shall use blue PE pipe and fittings complying with IS EN 12201 and the approved Uisce Éireann service-connection detail.

2.27.2 Each existing customer connection to be transferred shall be individually surveyed. The new connection shall be pressure-tight, hygienic, separately controllable and compatible with the existing customer-side material.

2.27.3 Boundary boxes shall be installed at the approved location, generally in public footpath/verge close to the property boundary and outside traffic wheel tracks where possible. All in accordance with Uisce Éireann standards and drawings.

2.27.4 Where meters are included, a temporary bridging piece may be used during flushing; the meter shall be installed after the service has been flushed clean.

2.27.5 Where a domestic PRV is required, the installation shall follow the current Uisce Éireann mini-PRV arrangement, with DN20 PRV (or approved equivalent), integral strainer, upstream isolation, transition fittings, pressure-logger connection and dedicated chamber.

2.27.6 Service trenches shall be backfilled and reinstated to the same standards as the main trench. All connection locations, meter serial numbers and PRV settings shall be recorded.

2.28 CUTTING PIPE

2.28.1 PE pipe shall be cut square using tools recommended by the manufacturer and without introducing cracks, gouges or contamination.

2.28.2 Cut ends for electrofusion shall be prepared strictly in accordance with the fitting manufacturer's instructions, including scraping of the oxidised surface and correct insertion depth marking.

2.28.3 Metallic or lined pipes shall be cut by methods that do not damage internal linings or protective coatings; damaged protection shall be reinstated.

2.29 PIPE SUPPORT IN BAD GROUND

2.29.1 Where the formation lacks adequate bearing, the pipe shall be supported on an approved engineered foundation such as additional granular replacement, geogrid/geotextile system, concrete slab or other designed solution.

2.29.2 Rigid support shall not be introduced in a way that creates an abrupt differential-support condition at the transition to normal bedding.

2.29.3 Where settlement is anticipated, flexible joints or transition details shall be arranged to accommodate movement.

2.30 PIPE SURROUND

2.30.1 Granular surround shall extend to the level shown on the standard detail and shall be compatible with the bedding material.

2.30.2 Material shall be placed evenly on both sides and worked beneath the haunches before being brought above the crown.

2.30.3 Compaction equipment used within the pipe zone shall be suitable for PE pipe and shall not displace or ovalise the pipe.

2.30.4 No large stone, rock, timber, frozen soil or construction debris shall be placed within the pipe surround.

2.31 ANCHORAGE OF PIPES AND FITTINGS

2.31.1 PE pipelines shall be designed and installed taking account of their restrained/fused nature. Concrete thrust blocks shall not be used indiscriminately where a fully welded PE system provides longitudinal restraint.

2.31.2 At interfaces with ductile iron, valves, flanges, end caps, hydrant branches or other components requiring structural restraint, the Contractor shall construct the approved anchor/restraint detail.

2.31.3 Any thrust/anchor block shall bear against competent undisturbed ground, shall not encase flexible joints and shall allow access to bolts and removable fittings where required.

2.31.4 Temporary end restraints used for pressure testing shall be designed for the full test load with an appropriate safety factor.

2.32 BACKFILLING (IN NORMAL GROUND)

2.32.1 Backfilling shall commence as soon as the pipe surround is accepted and shall proceed in layers appropriate to the material and compaction plant.

2.32.2 In roads and trafficked areas, imported granular fill shall comply with the relevant road-opening and TII/Purple Book requirements. Clause 804-type material shall meet the current applicable grading and quality requirements.

2.32.3 Backfill shall be compacted to the specified density without damaging the pipe. Heavy compaction plant shall not operate directly over the pipe until adequate cover has been placed.

2.32.4 Excavated material may only be reused outside trafficked pavement layers where it is demonstrably suitable and permitted by the Contract.

2.32.5 Compaction records/tests shall be provided where required by the Road Opening Licence or Employer's Representative.

2.33 BACKFILLING (IN ROCK)

2.33.1 Excavated rock shall not be placed directly around or immediately above the pipe.

2.33.2 Where rock is proposed for reuse at higher levels of the trench, it shall be processed to an approved grading and placed only where permitted by the road authority/Employer's Representative.

2.33.3 Voids shall not be bridged by large rock fragments and backfill shall be capable of achieving the required compaction.

2.34 DEFICIENCY OF MATERIAL FOR FILL

2.34.1 Where suitable excavated material is insufficient, the Contractor shall supply approved imported fill at the rates deemed included in the Contract unless separately measured.

2.34.2 Imported material shall be sourced legally and shall be accompanied by grading/test information where required.

2.35 DISPOSAL OF SURPLUS

2.35.1 Surplus material shall be removed promptly as backfilling proceeds so that the work zone remains safe and does not unnecessarily obstruct the road.

2.35.2 Disposal/recovery records shall be maintained and made available to the Employer's Representative.

2.36 USE OF MATERIALS EXCAVATED FROM PUBLIC PROPERTY

2.36.1 Materials excavated from public property shall not be removed for the Contractor's private use.

2.36.2 Suitable materials may be reused within the Works only where compliant with the Specification and permitted by the Employer's Representative/road authority.

2.36.3 Kerbs, paving, signs and other recoverable items remain the property of the relevant authority unless otherwise directed.

2.37 MATERIAL EXCAVATED FROM PRIVATE PROPERTY

2.37.1 Excavated material arising on private property shall be dealt with in accordance with the landowner agreement and instructions communicated through the Employer's Representative.

2.37.2 Where the landowner does not wish to retain surplus material, the Contractor shall remove and dispose/recover it lawfully.

SECTION 3 – MATERIALS

3.1 BRICKWORK/BLOCKWORK

3.1.1 Concrete masonry units used in chambers, kiosk walls or other structures shall comply with IS EN 771-3 and shall have strength, density, durability and dimensional properties suitable for the intended exposure.

3.1.2 Blocks shall be sound, uniform and free from damage. Units used below ground or in wet locations shall be suitable for the exposure class and any specified sulphate environment.

3.1.3 Samples/product data shall be submitted where requested. Masonry shall be stored clear of the ground and protected from saturation, frost and contamination.

3.2 MATERIAL FOR MORTARS

3.2.1 Mortar materials shall comply with applicable European standards, including cement to EN 197-1, building lime to EN 459 where used, and aggregates to EN 12620.

3.2.2 Water used for mortar shall be clean and suitable for construction. Admixtures shall be compatible with the mortar system and shall not be used without approval.

3.2.3 Factory-produced or site-batched mortar shall achieve the specified strength class and durability to IS EN 998-2 or the approved structural specification.

3.3 CONCRETE STRUCTURES

3.3.1 Concrete shall comply with IS EN 206 and the applicable Irish complementary standard/provisions. The mix shall be selected for the required structural strength, exposure class, cover, permeability and durability.

3.3.2 Unless otherwise shown, structural concrete for chambers, slabs, plinths and other watermain structures shall be a minimum grade appropriate to the design, typically C30/37 for reinforced work and C20/25 or C25/30 for non-structural/lean applications, subject to the Drawings.

3.3.3 Reinforcement shall comply with BS 4449 or equivalent current standard and shall be fixed with the specified cover.

3.3.4 Concrete shall be placed, compacted, finished and cured in a manner that prevents honeycombing, segregation and rapid moisture loss. Concrete damaged by frost or unacceptable workmanship shall be replaced.

3.3.5 Ready-mix delivery dockets and any specified strength-test results shall be retained in the quality records.

3.4 CEMENT MORTARS

3.4.1 Cement mortar shall be proportioned or specified by strength class for the intended use. Mortar for chamber blockwork shall be durable in damp below-ground conditions.

3.4.2 Mortar shall be mixed in controlled batches and used within its workable life. Re-tempering of set mortar is prohibited.

3.4.3 Finished joints shall be dense and fully filled. Internal chamber surfaces shall be rendered where shown or required for durability/watertightness.

3.5 STRUCTURES

3.5.1 Structures included in the Works, such as pump kiosk bases, valve chambers, meter chambers, PRV chambers, concrete slabs and supports, shall be constructed to the Contract Drawings and approved structural details.

3.5.2 Where a packaged booster pump station is included, the foundation/plinth shall be designed for equipment loads, vibration, pipe reactions and maintenance access. The kiosk shall provide safe working space, drainage, ventilation, lighting and corrosion-resistant finishes.

3.5.3 Openings and penetrations through structures shall be sealed against water ingress and shall not compromise structural capacity or potable-water hygiene.

3.5.4 Heavy equipment shall be installed only after foundations have attained the required strength.

3.6 BLOCK WALLS

3.6.1 Block walls shall be built true to line, level and plumb, with full mortar beds and joints and proper bonding at returns/intersections.

3.6.2 Movement joints, DPCs, cavity details, wall ties and openings shall be provided where indicated by the structural/architectural design.

3.6.3 Where kiosk or enclosure walls are part of the Works, they shall be weather-tight, durable and finished to the Contract requirements.

3.7 PLASTERING/RENDERING

3.7.1 Rendering shall use materials and workmanship suitable for external exposure and damp/wet conditions where applicable.

3.7.2 Backgrounds shall be clean, sound and suitably prepared. Bonding coats or reinforcement mesh shall be used where required to control cracking.

3.7.3 Rendering shall not be applied during unsuitable frost, heavy rain or rapid-drying conditions. Finished surfaces shall be even, dense and free from cracking or debonding.

3.8 FENCING

3.8.1 Permanent fencing, where included around a pump kiosk or other asset, shall comply with the Contract Drawings and relevant parts of BS 1722 or approved equivalent.

3.8.2 Posts, mesh, gates and fixings shall be galvanised or otherwise corrosion-protected for the exposure and design life.

3.8.3 Fence lines shall be neat, securely founded and coordinated with access gates, sight lines and maintenance areas.

3.8.4 Temporary fencing required for construction shall be stable, securely fixed and suitable for public-road conditions.

3.9 PRESSURE MAINS

3.9.1 The principal watermain shall be PE100 DN 110 SDR17 pipe manufactured and third-party certified to IS EN 12201 for potable-water pressure applications.

3.9.2 Pipe and fittings shall be suitable for the design operating pressure, surge pressure and approved system test pressure. The pressure rating of the complete system shall be governed by the lowest-rated component.

3.9.3 PE pipe shall be blue or otherwise identified for potable water in accordance with applicable Uisce Éireann/project requirements. Markings shall remain legible and include manufacturer, material, SDR, size, pressure/class and production traceability.

3.9.4 PE fittings shall be compatible with the pipe material and fusion process. Electrofusion fittings shall be individually traceable.

3.9.5 All metallic fittings, flange adaptors, tees and valve interfaces shall be potable-water approved and protected against corrosion appropriate to burial conditions.

3.9.6 Before procurement, the Contractor shall submit pipe/fitting data sheets, certificates of conformity, potable-water approvals and proposed jointing system for review.

3.10 CAST IRON TEES

3.10.1 Ductile iron or other approved metallic tees shall be used at valve, hydrant, scour, air-valve and branch connections where shown or required by the approved detail.

3.10.2 Fittings shall comply with the relevant EN standard for ductile iron water fittings and shall be coated/lined for potable-water service.

3.10.3 PE-to-metal transitions shall use approved flange adaptors, restrained couplings or fabricated PE fittings as detailed.

3.11 FERRULES

3.11.1 Ferrules and tapping saddles shall be approved for use on PE100 watermain and shall be suitable for the service size, pressure and potable-water application.

3.11.2 Saddles shall provide full support and sealing without overstressing the main. Installation and tapping shall follow the manufacturer's method and Uisce Éireann standard detail.

3.11.3 Electrofusion saddles shall be prepared, fused, cooled and pressure-tested in accordance with the approved fusion procedure before tapping.

3.12 BOUNDARY BOXES

3.12.1 Boundary boxes shall be Uisce Éireann-approved units suitable for domestic/small commercial service connections and for the specified meter installation.

3.12.2 The complete assembly shall be corrosion resistant, frost protected, capable of adjustment to finished ground level and structurally suitable for the location/loading class.

3.12.3 Each box shall incorporate the specified stop-tap, non-return valve, frost protection and meter/manifold arrangement. A bridging piece shall be provided where required for flushing prior to meter installation.

3.12.4 Boundary boxes shall be installed in accordance with the current Uisce Éireann standard detail, including foundation, surround, cover level and setback from the property boundary.

3.12.5 Boxes shall normally be located in public footpath/verge and not in the carriageway. Where unavoidable, the cover and installation shall be specifically approved for traffic loading.

3.12.6 Flexible/compatible transition fittings shall be provided between the new service and existing consumer pipe where materials differ. Connections shall be robust and accessible.

3.12.7 The completed location, box type, associated meter serial number and customer reference shall be recorded.

3.13 WATER METER INSTALLATION AT BOUNDARY BOXES

3.13.1 Water meters shall be of an approved type compatible with the boundary box and Uisce Éireann reading system. Where remote/AMR reading is required, the meter and communications module shall be fully compatible.

3.13.2 Meters shall comply with IS EN ISO 4064 or other applicable approved metering standard and shall be sized for the expected domestic flow range.

3.13.3 Meter installation shall permit easy replacement without unnecessary disturbance to customer-side pipework. Couplings shall be leak-tight and corrosion resistant.

3.13.4 The service shall be thoroughly flushed before the meter is placed into permanent service. After installation, the connection shall be leak-tested and the reading checked.

3.13.5 The Contractor shall record meter make/model, serial number, initial reading, customer/property reference and location.

3.13.6 Where an individual domestic PRV is required, it shall be installed in a separate dedicated chamber in accordance with current Uisce Éireann STD-W-45 or equivalent approved detail. The PRV shall be commissioned to the scheduled downstream pressure and the setting recorded.

3.14 SLUICE VALVES

3.14.1 Sluice/isolation valves shall comply with the applicable parts of IS EN 1074 and current Uisce Éireann requirements for buried water-network valves.

3.14.2 Valves shall be resilient-seated, suitable for potable water, pressure rated for the system and generally clockwise closing unless the project standard requires otherwise.

3.14.3 Valve bodies, stems, seals and coatings shall be suitable for buried service. Extension spindles/caps shall be provided where required.

3.14.4 Valves shall be positioned to allow isolation of manageable sections and to suit tie-ins, branches and operational requirements shown on the Drawings.

3.14.5 Each valve shall be exercised fully after installation and its location recorded.

3.15 HYDRANTS

3.15.1 Hydrants, where included, shall comply with the applicable Uisce Éireann and Clare County Council requirements and relevant parts of IS EN 1074.

3.15.2 Hydrant type, branch size, isolation arrangement, chamber, cover, drainage and marker plate shall be as shown on the approved details.

3.15.3 Hydrants shall be located so they can be accessed safely and shall not be obstructed by walls, parking or vegetation.

3.15.4 Each hydrant shall be flushed, checked for leakage and operation, and recorded in the as-built schedule.

3.16 VALVE CHAMBERS AND SURFACE BOXES

3.16.1 Valve, hydrant, air-valve, scour, meter and PRV chambers shall be constructed to the current Uisce Éireann standard details or project-specific approved detail.

3.16.2 Covers and frames shall comply with IS EN 124 and the required loading class for the location. D400 covers shall be used in trafficked carriageways unless a different approved class/detail applies.

3.16.3 Chambers shall be founded on stable material and shall not bear directly on the watermain or transfer load to valves/fittings.

3.16.4 Internal dimensions shall permit operation, inspection and replacement of the contained equipment. Covers shall finish flush with the completed surface and shall not rock.

3.16.5 Surface water ingress shall be controlled, and air-valve chambers shall be drained/vented in accordance with the standard detail.

3.17 TRANSPORT AND STORAGE

3.17.1 Pipe and fittings shall be handled, transported and stored in accordance with manufacturer guidance and in a manner that prevents scoring, deformation, coating damage and contamination.

3.17.2 PE pipe shall be supported on level bearers and restrained against rolling. Stacking height shall not exceed the manufacturer's recommendation.

3.17.3 Lifting shall use web slings or approved devices; chains or wire ropes shall not contact PE pipe directly.

3.17.4 Electrofusion fittings, gaskets, meters and valves shall be stored clean, dry and protected from UV/weather until required.

3.17.5 Any component damaged during transport/storage shall be quarantined and shall not be installed unless accepted after assessment.

SECTION 4 TESTING, FLUSHING AND STERILISING MAINS

4.1 TESTING PIPELINES

4.1.1 The Contractor shall submit a detailed pressure-test method statement before testing. It shall identify the test section, design/maximum operating pressure, proposed system test pressure, lowest-rated component, temporary end restraints, test equipment, filling/venting method, exclusion zone and acceptance criteria.

4.1.2 PE pipeline testing shall be carried out in accordance with IS EN 805, current Uisce Éireann requirements and the accepted PE pressure-testing methodology applicable to the Works. The test pressure shall be derived from the system design/maximum pressure and shall not exceed the permissible rating of any component.

4.1.3 Before testing, the pipeline shall be sufficiently backfilled and restrained, valves and caps secured, high points vented and all temporary works checked. No person shall stand in line with temporary end closures during pressurisation.

4.1.4 Pressure gauges/transducers shall have current calibration certificates and suitable range/accuracy. A data logger shall be used where required.

4.1.5 Any section that fails shall be depressurised safely, defects located and repaired, and the full test repeated after the PE pipe has been allowed sufficient recovery time.

4.1.6 Formal test records shall state date, section limits, pipe size/material/SDR, test pressure, duration, equipment, readings, result and witness details.

4.1.7 Service connections up to and including boundary-box/manifold arrangements shall be included in testing as appropriate to the approved test sequence.

4.2 FLUSHING AND CHLORINATING WATERMAINS

4.2.1 After successful pressure testing, the new main shall be flushed until visible debris/turbidity has been removed and the water is suitable for disinfection.

4.2.2 Disinfection shall follow an approved method statement consistent with Uisce Éireann water-hygiene requirements. The submission shall state disinfectant type, target concentration, contact period, monitoring, neutralisation/dechlorination and disposal arrangements.

4.2.3 Potable water shall be used for filling, flushing and final rinse. Cross-connection to an existing live main shall be protected from backflow/contamination throughout.

4.2.4 After the required contact period the main shall be flushed with potable water until chlorine residual and water quality are acceptable for sampling.

4.2.5 Water-quality samples shall be taken from representative points by competent personnel and tested by an appropriate laboratory. The main shall not be put into permanent supply until satisfactory results are confirmed.

4.2.6 Where a sample fails, the affected section shall be investigated, refushed/redisinfected and resampled at the Contractor's cost.

4.2.7 Discharge of chlorinated water shall be controlled so that it does not damage the environment or enter a watercourse without appropriate dechlorination/approval.

SECTION 5 – REINSTATEMENT

Reinstatement requirements are particularly important on the R463 and shall be governed by the Road Opening Licence, road authority direction and approved drawings.

5.0 GENERAL REQUIREMENTS

5.0.1 All temporary and permanent reinstatement shall comply with the Clare County Council Road Opening Licence, the Guidelines for Managing Openings in Public Roads (Purple Book), applicable current TII Specification for Road Works and the approved Contract Drawings.

5.0.2 The Contractor shall establish the existing pavement type, layer thicknesses and condition before excavation and shall retain photographic records.

5.0.3 Permanent reinstatement extents shall distinguish between longitudinal and transverse openings. Cut-back widths, joint positions, surface-course widths and any requirement for lane-width or extended reinstatement shall comply with the Road Opening Licence and road-authority direction.

5.0.4 Materials and compaction shall be subject to quality control and testing where required. Finished levels shall match adjoining surfaces and preserve drainage.

5.0.5 The Contractor remains responsible for settlement, fretting, rocking covers and other reinstatement defects during the maintenance period.

5.1 TEMPORARY REINSTATEMENT- TRENCH SURFACES

5.1.1 Temporary reinstatement shall be provided promptly wherever permanent reinstatement is not completed immediately.

5.1.2 In trafficked areas, temporary surfacing shall be stable, compacted, skid resistant and flush with adjacent pavement. It shall be capable of carrying expected traffic without rutting or potholing.

5.1.3 Temporary reinstatement shall be inspected regularly and after heavy traffic/rain. Defects shall be repaired immediately.

5.1.4 Footpath temporary reinstatement shall provide a firm, even and accessible pedestrian surface with no trip edge.

5.1.5 Grass verges/gardens shall be left safe and reasonably level pending final restoration. Open stone-filled trenches or depressions that create a hazard are not acceptable.

5.2 ROAD REINSTATEMENT - TRENCH SURFACES

5.2.1 Permanent road reinstatement shall not proceed until the trench backfill is adequately compacted and any settlement has been addressed.

5.2.2 Existing pavement shall be cut back to sound, straight vertical edges. Loose/damaged material shall be removed and joints cleaned. Tack/bond coat and joint sealing shall be applied in accordance with the approved pavement specification.

5.2.3 Granular and hydraulically bound layers shall comply with the applicable TII Series 800 requirements or road-authority specification. Bituminous layers shall comply with the applicable TII Series 900 requirements.

5.2.4 For the R463 regional road, the final pavement build-up shall be the build-up stated in the Road Opening Licence/Contract Drawings. The Contractor shall not substitute a lesser county-road detail.

5.2.5 Longitudinal trench reinstatement shall comply with required offsets from wheel tracks, lane lines and pavement edges. Where the remaining strip of pavement would be too narrow or structurally unsatisfactory, the surface course or pavement may be required to extend to lane/road edge as directed.

5.2.6 Transverse cuts shall be reinstated across the full affected width specified by the Road Opening Licence and with joints arranged so that short patches and weak wedges are avoided.

5.2.7 Footpaths shall be reinstated to the original material and full structural depth, including base, concrete/bituminous surfacing, paving flags or blocks as applicable. Kerbs and channels shall be reset true to line and level.

5.2.8 All utility covers shall be adjusted to finished level. Finished surfacing shall drain freely and have a uniform texture and appearance.

5.3 RESTORATION OF SITE AREAS, ETC.

5.3.1 Fields, grass margins, gardens and other disturbed areas shall be restored to their previous profile unless otherwise agreed.

5.3.2 Topsoil shall be reinstated to an appropriate depth, generally not less than 225 mm where topsoil has been stripped, unless site conditions indicate otherwise.

5.3.3 Areas shall be cleared of construction debris and large stones, graded, cultivated and seeded with an appropriate grass mix or returfed where specified.

5.3.4 Fences, gates, hedges, drains and other features disturbed by the Works shall be reinstated to at least their previous functional condition.

5.3.5 Any settlement or erosion occurring during the maintenance period shall be corrected.

SECTION 6 – HEALTH & SAFETY

6.0 GENERAL

6.0.1 The Contractor shall comply with the Safety, Health and Welfare at Work Act 2005, the Safety, Health and Welfare at Work (Construction) Regulations 2013 as amended, the General Application Regulations and all other applicable legislation.

6.0.2 The Contractor appointed as PSCS shall coordinate construction safety and shall ensure that the Construction Stage Safety and Health Plan is in place before work commences.

6.0.3 Particular attention shall be given to live traffic, excavations, underground/overhead services, lifting operations, pressure testing, chlorination chemicals, temporary works, public protection and work adjacent to live water infrastructure.

6.0.4 Nothing in this Specification relieves any party of statutory duties.

6.1 PRELIMINARY SAFETY AND HEALTH PLAN

6.1.1 The Preliminary Safety and Health Plan issued with the tender forms part of the Contract information and identifies project-specific hazards and design-stage residual risks.

6.1.2 Tenderers shall allow for the control measures, resources and coordination necessary to address those risks.

6.1.3 The PSCS shall develop the preliminary plan into a site-specific Construction Stage Safety and Health Plan reflecting actual construction methods, traffic-management layouts, temporary works, service information, emergency arrangements and subcontractors.

6.2 REGULATIONS AND CODES OF PRACTICE

6.2.1 The Contractor shall apply current HSA codes/guidance relevant to construction, excavation, underground services, lifting operations, work equipment, PPE, confined spaces, noise, vibration and traffic management.

6.2.2 Temporary traffic management shall comply with current Irish requirements including Traffic Signs Manual Chapter 8 and the approved traffic-management plan.

6.2.3 PE fusion and pressure testing shall be carried out using manufacturer and industry procedures that specifically address burns, stored energy and end-restraint hazards.

6.2.4 Chemical safety assessments/SDS shall be maintained for chlorine/disinfectant products, fuels, adhesives, coatings and other hazardous substances.

6.3 TEMPORARY WORKS

6.3.1 The Contractor shall establish a temporary-works management procedure appropriate to the scale and complexity of the project.

6.3.2 A competent Temporary Works Designer/Coordinator shall be appointed where required. Designs shall be prepared and checked for trench support, road plates, temporary structures, lifting frames, pipe supports, test end restraints, pump foundations or other engineered temporary works.

6.3.3 Temporary works shall be inspected before use and after alteration or events that could affect their integrity.

6.3.4 No temporary works shall impose unacceptable loads on roads, buried utilities, bridges, culverts or existing watermain infrastructure.

6.4 SAFETY FILE

6.4.1 The PSCS/Contractor shall compile Safety File information progressively rather than at project completion only.

6.4.2 The Safety File shall include as-built drawings and coordinates, asset schedules, valve/air-valve/scour/PRV/meter locations, material certificates, PE fusion records, pressure-test records, disinfection and water-quality results, commissioning records, electrical/mechanical O&M information and residual-risk information.

6.4.3 Where proprietary equipment such as booster pumps, control panels, meters or PRVs is installed, manufacturer manuals, settings, certificates and maintenance requirements shall be included.

6.4.4 The final Safety File information shall be issued in the format and number of copies required by the Contract.

APPENDIX A – PROJECT-SPECIFIC MATERIAL / ASSET SCHEDULE

The items listed below are to be furnished by contractor to Employers Representative in the form of a report with all listed items attached. Title of same to be ***Raheen GWS upgrade works 2026 material/asset schedule***.

Asset	Project Requirement	Primary Standard / Detail	Records Required
Main watermain	PE100 DN 110 SDR17	IS EN 12201; IS EN 805; Uisce Éireann technical requirements	Manufacturer certs; batch traceability; as-built coordinates
PE joints	Butt fusion / electrofusion	WIS 4-32-08; manufacturer procedure	Welder certs; fusion logs; GPS/joint register
Boundary boxes	Approved domestic boundary box	Current Uisce Éireann standard detail, incl. STD-W-03 where applicable	Property ref; location; photo
Domestic meters	Approved AMR/manual meter as scheduled	IS EN ISO 4064; GWS requirements	Serial no.; initial reading; property ref
Domestic PRVs	Where required by hydraulic design	Uisce Éireann STD-W-45 / approved equivalent	Location; set pressure; commissioning record
Isolation/slucice valves	Resilient-seated buried valves	IS EN 1074; Uisce Éireann requirements	Asset ID; coordinates; operation test
Air/scour valves	As shown / hydraulic profile	Uisce Éireann standard details	Asset ID; coordinates; commissioning
Chambers/covers	Traffic/loading appropriate	IS EN 124; Uisce Éireann details	Cover class; photo; level
Reinstatement	R463/local roads/footpaths	Road Opening Licence; Purple Book; TII Series	Material tickets; compaction/testing where required

APPENDIX B – HOLD AND WITNESS POINTS

Ref	Hold / Witness Point	Minimum Submission / Evidence
H01	Approval of principal pipework/materials	Technical submittals, certs, potable-water approvals
H02	Trial holes / existing-services proving	Marked-up utility records and trial-hole log
H03	First trench/bedding installation	Inspection of formation, bedding and pipe placement
H04	PE fusion setup	Operative certs, machine calibration and trial/initial joint records
H05	Boundary box / meter / PRV sample installation	Approved detail and representative completed installation
H06	Pressure testing	Approved test method, calibrated instruments and witness notice
H07	Disinfection / water quality	Approved method and laboratory plan/results
H08	Live tie-in / shutdown	Approved isolation plan and customer notifications
H09	Permanent road reinstatement	Road-authority acceptance of build-up/limits and surfacing method
H10	Commissioning and handover	As-builts, asset schedule, fusion/test/disinfection/Safety File records

APPENDIX C – PRINCIPAL STANDARDS REGISTER

Reference	Subject	Project Application
CDS-5020-01 Rev 05	Uisce Éireann Water Infrastructure Standard Details	Technical benchmark for mains, valves, connections, chambers, boundary boxes, PRVs and associated details
CDS-5020-03 Rev 03	Uisce Éireann Code of Practice for Water Infrastructure	Design/construction/commissioning benchmark, subject to project applicability
IS EN 12201 series	PE pressure piping systems	Main, services and fittings
IS EN 805	Water supply systems outside buildings	Installation, testing and commissioning
IS EN 1074 series	Valves for water supply	Sluice valves, hydrants, air valves and related products
IS EN 124 series	Manhole/gully tops	Chamber and surface-box loading classes
IS EN 206	Concrete	Chambers, slabs, plinths, supports
IS EN ISO 4064 series	Water meters	Domestic meter performance/installation where applicable
WIS 4-32-08	Fusion jointing of PE pressure systems	PE butt/electrofusion workmanship and QA
WIS 4-32-16	Butt-fusion machines	Jointing equipment where specified
Traffic Signs Manual Chapter 8	Roadworks signing/traffic management	R463 and local roads
Guidelines for Managing Openings in Public Roads	Road openings and reinstatement	Non-national road reinstatement/road-opening framework
TII Series 600/700/800/900/1100	Roadworks materials and workmanship	Earthworks, pavements, granular, bituminous, kerbs/footways as applicable
Safety, Health and Welfare at Work (Construction) Regulations 2013	Construction safety	PSCS, safety planning, excavation and construction duties