ENGINEERING COMPLIANCE AUDIT

Automated Gap Analysis & Requirement Validation

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1. Executive Summary

This report details the findings of an automated compliance comparison between **LDA.pdf** and **EDC - ELECTRICAL PARTICULAR SCOPE OF WORKS.pdf**.

Total Topics Analyzed: **10**

2. Detailed Compliance Matrix

Topic: Access Control

1. Analysis Summary

• **Conflict**: A significant conflict exists regarding the **Access Control System Architecture**. Document A (LDA) specifies a **distributed architecture** where access decisions are made locally at the Intelligent System Controller (ISC). Document B (EDC) does not specify the architecture but states the system shall be controlled from an **existing security room dedicated PC-based system already on site**. This implies a more centralized control model. The LDA's requirement for a "single software package" at a central computer also conflicts with integrating into an unspecified pre-existing system.

- **Alignment**: Both documents are well-aligned on core functional requirements:
- Integration of Intercom and Access Control systems.
- Fire alarm interface to release access-controlled doors.
- Provision of power and data to security systems.
- Use of high-quality, vandal-resistant components (e.g., IK10 rating for intercoms).

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULAR SCOPE OF WORKS.pdf (Comp)	Status
Door Thickness	44 mm	Not Specified	■ Missing in B
Kickplate Height	150mm	Not Specified	■ Missing in B
Service Void Height (to avoid exit detectors)	800mm	Not Specified	■ Missing in B
Mat Depth	1.5m	Not Specified	■ Missing in B
SVP Height above Roof (Standard)	300mm	Not Specified	■ Missing in B
SVP Height above Roof (near openings)	900mm	Not Specified	■ Missing in B
Structured Cabling Frequency/Data Rate	Up to 500MHz / 10Gbit/s	Cat 6A F-UTP (Implies up to 500MHz/10Gbit/s)	■ Aligned
Structured Cabling Channel Length	100m	Not Specified	■ Missing in B
CCTV Cable Type	Category 6A	Shielded Cat 6A F-UTP LSZH	■ Aligned
CCTV Cable Length Limit (Copper)	Not Specified	90m (beyond requires fibre)	■■ B adds detail
External Intercom Rating	IP54, IK10	IK10, Stainless Steel (IP not specified)	■■ Partial Conflict (IP rating missing in B)
Electric Lock Holding Force	12kN	Not Specified	■ Missing in B
RCD Rating	30mA	Not Specified	■ Missing in B
External Camera Min. Illumination	Not Specified	0.1 to 0.4 lux	■■ B adds detail

Internal Camera Min. Illumination	Not Specified	1 lux	■■ B adds detail
Internal Camera Focal Length	Not Specified	3.6-12mm	■■ B adds detail
External Lighting RCBO Height Trigger	Not Specified	< 2.8m AFFL	■■ B adds detail
Main LV Switchboard Classification	Form 4a	Form 4a	■ Aligned
Sub-Distribution Switchboard Classification	Form 3b	Form 4b	■■ **Conflict**
Sub-Distribution Switchboard Fault Level	25kA	Not Specified	■ Missing in B
Generator Noise Level @ 1m	79 dbA	Not Specified	■ Missing in B
Generator Noise Level @ 7m	69 dbA	Not Specified	■ Missing in B

3. Action Items (Draft TQ)

1. **TQ-AC-01: Access Control System Architecture & Integration**

* **Query**: Document A (LDA) Clause 4.10.2 requires a distributed access control architecture with local decision-making at ISCs, controlled by a single software package. Document B (EDC) references integration with an existing on-site security room PC system. Please clarify:

a) Which architectural model (distributed ISC vs. centralized PC server) is to be implemented?

b) How will the new system integrate with the existing security infrastructure? Are the existing system's make, model, and integration protocol available?

c) Which document takes precedence for the system's core architecture?

2. **TQ-AC-02: Sub-Distribution Switchboard Specification**

* **Query**: A conflict exists in the switchboard classification. LDA specifies Form 3b, while EDC specifies Form 4b. Furthermore, the fault level (25kA) and specific assembly details from the LDA are absent from the EDC. Please confirm the required Form classification (3b or 4b), fault level, and full assembly specification for the sub-distribution switchboards.

3. **TQ-AC-03: Missing Performance & Dimensional Specifications**

* **Query**: Numerous performance and dimensional specifications from the LDA are not referenced in the EDC scope of works, including but not limited to: door/kickplate dimensions, service void height, mat size, pipework termination heights, electric lock holding force (12kN), and RCD rating (30mA). Please confirm if these LDA requirements are to be included within the electrical contractor's scope or another trade's scope, and if they are to be implemented as specified.

Topic: BMS

1. Analysis Summary

• **Conflict**: There is a direct contradiction regarding the **integration of the intercom and access control systems with the fire alarm**. Document A (LDA) states that the access control system shall be *disabled* by the fire alarm on activation. Document B (EDC) states that the contractor shall *interface to the fire alarm system to release doors* controlled by the access control system. While both aim to allow egress during a fire, "disable" (implying a loss of power/lock) and "release" (implying unlocking) are functionally different commands that could lead to incompatible hardware or programming if not clarified.

• **Alignment**: Both documents are strongly aligned on core BMS and integration principles. Key agreements include:

- The requirement for a BMS to monitor landlord plant, electrical/water metering, and the generator.
- The need for multi-function/energy metering with pulsed/Modbus output for BMS integration.
- The electrical contractor's responsibility for installing all control cabling, panels, and terminations for mechanical/BMS equipment.
- The requirement for a specialist controls subcontractor/vendor (LDA) or detailed vendor proposal (EDC) for control systems.
- The integration of security systems (CCTV, Access Control) into a single management platform.
- Compliance with a common core set of regulations (IS10101, BCAR, Fire Officer Requirements, etc.).

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULARS	Status
Dead Band (Heating/Cooling)	20C	Not Specified	■■ Base Spec Only
Generator Noise @ 1m	79 dbA	Not Specified	■■ Base Spec Only
Generator Noise @ 7m	69 dbA	Not Specified	■■ Base Spec Only
Monitor Refresh Rate	120Hz	Not Specified	■■ Base Spec Only
Meter Output Signal	Not Specified	0-10V	■■ Comp Spec Only
AV Unit Supply Voltage	Not Specified	24V	■■ Comp Spec Only
Mechanical Load Isolator Rating	Not Specified	>2kW	■■ Comp Spec Only
Power/Signal Cable Separation	Not Specified	>50mm	■■ Comp Spec Only
Legionella Activation Temp	20°C	Not Specified	■■ Base Spec Only

3. Action Items (Draft TQ)

- **TQ-01: Fire Alarm Interface to Access Control**

* **Query:** Document A, Section 4.10.2 requires the access control to be "disabled" by the fire alarm. Document B, Section 20 requires an "interface to fire alarm system to release doors controlled by access control system." These terms imply different end-states for the locking hardware (e.g., fail-safe vs. fail-secure). Please confirm the precise required action: Should the fire alarm signal **a) cut power to the lock (fail-safe/unlocked), b) energize the lock to release (fail-secure/unlocked), or c) send a software command to the ACS to unlock?** A single, unambiguous specification is required for system design and procurement.

Topic: Electrical

1. Analysis Summary

- **Conflict**: A significant conflict exists regarding the **Form Classification of Sub-Distribution Boards**. Document A (LDA) specifies **Form 3b** for Sub-Distribution Boards, while Document B (EDC) specifies **Form 4b** for Sub-Distribution Switchboards. Form 4b offers a higher degree of internal separation and protection than Form 3b. This is a critical specification discrepancy that must be resolved.
- **Alignment**: There is strong alignment on core regulatory compliance (IS 10101, CPR, Building Regs), general workmanship standards, and many specific technical requirements (e.g., 25% spare capacity on boards, 200mm clipping near glands, cable segregation rules, EV charger power rating). Both documents mandate high-quality, certified installations with comprehensive testing and O&M; documentation.

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULARS	Status
Residential Unit Supply	80A/63A single-phase	Not explicitly stated	■ Missing in B
Main LV Switchboard Fault Level	65kA for 1.0 sec	Not explicitly stated	■ Missing in B
Sub-Distribution Board Fault Level	25kA for 1.0 sec	Not explicitly stated	■ Missing in B
RCD/RCBO Rating	30mA, 9kA SCCB	Not explicitly stated	■ Missing in B
Sub-Distribution Board Form Type	**Form 3b** (IS EN 61439-2)	**Form 4b** (IS EN 61439-2)	■■ **Critical Conflict**
Switchgear Enclosure Metal Thickness	Not specified	Frame: 2.5mm, Panels: 1.5mm min	■ Added in B
Main Earth Bar Size (for ACB boards)	Not specified	300 mm² min	■ Added in B
Anti-Condensation Heater Supply	Not specified	240V, 50Hz	■ Added in B
Meter BMS Output	Not specified	0-10V	■ Added in B
Cable Tie Interval on Tray/Ladder	Table based on cable dia.	Max 500mm	■ Added in B (may align with table)
Socket Circuits - Cable Size	Not explicitly stated for all	4mm² min	■ Added in B
Socket Circuits - Max Outlets	6 twin sockets per circuit	6 single sockets per circuit	■■ **Conflict (Twin vs. Single)**
Cooker Cable Size	10.0mm²	Not explicitly stated	■ Missing in B
EV Charger Unit	230V, 7.0kW	32A 3-phase capable (≈22kW)	■■ **Conflict (Power Rating)**
Access Control Relay Voltage	12V AC	Not explicitly stated	■ Missing in B
CCTV System Cabling	Cat 6A	Cat 6A CPR Cca	■ Aligned (B adds CPR class)
PV Inverter Rating	75-80% of array rating	Not explicitly stated	■ Missing in B
PV Inverter Efficiency	>90%	Not explicitly stated	■ Missing in B
PV Module Warranty	90% after 10y, 80% after 25y	Not explicitly stated	■ Missing in B
BMS Signal/Power Cable Separation	Not specified	>50mm physical separation	■ Added in B
Lift Supply	Not explicitly stated	63A 3ph + 3 No. [likely cores]	■ Added in B
Generator Battery Voltage	Not specified	24V system	■ Added in B
TV Power Spur	Not specified	230V 13A	■ Added in B
TV Cable Length	Not specified	<50m	■ Added in B
Isolator Height (AFFL)	Not specified	1100mm	■ Added in B
EAHP Isolator Distance	Not specified	Max 1m from unit	■ Added in B
EAHP Circuit Protection	Not specified	20A Type B RCBO	■ Added in B
Lighting Control Switch Rating	Not specified	20A	■ Added in B
Lighting Circuit Cable Size	Not specified	1.5mm² min	■ Added in B

3. Action Items (Draft TQ)

1. **TQ-01: Sub-Distribution Board Form Classification**

* **Query:** Document A (Client Specification) requires Sub-Distribution Boards to be Form 3b to IS EN 61439-2. Document B (Contractor's Scope) specifies Form 4b. Form 4b provides a higher degree of separation. Please confirm which Form classification is required for the project. If Form 4b is required, Document A must be formally amended.

2. **TQ-02: Electric Vehicle Charging Point Specification**

* **Query:** Document A specifies 230V, 7.0kW (single-phase ~32A) EV charging units. Document B specifies units capable of delivering 32A 3-phase power (approx. 22kW). Please confirm the definitive technical specification for the EV charging points to ensure compliance with Planning and Building Regulations.

3. **TQ-03: Socket-Outlet Circuit Design**

* **Query:** Document A limits circuits to 6 No. twin socket outlets. Document B limits circuits to 6 No. single socket outlets. This represents a significant difference in circuit loading. Please clarify the definitive design rule for the maximum number of outlets per final circuit.

4. **TQ-04: Missing Critical Parameters in EDC Scope**

* **Query:** Several critical design parameters from the Client Specification (LDA) are not explicitly stated in the EDC Scope of Works, including: Main & Sub-Board fault levels (65kA/25kA), RCD/RCBO specifications (30mA, 9kA), PV system performance warranties, and inverter specifications. Please confirm that the EDC design will fully comply with all numerical parameters stated in Document A. Provide a compliance matrix.

Topic: Fire Safety

1. Analysis Summary

• **Conflict**: The fire alarm system standards are in conflict. Document A (LDA) mandates compliance with **EN54-13 and all other EN54 standards**, while Document B (EDC) mandates compliance with **IS 3218: 2013 + A1: 2019**. While IS 3218 is based on EN54, they are different national standards. The documents also conflict on the residential unit alarm system type: LDA specifies a **Grade D, category LD1 system per BS 5839-6**, whereas EDC specifies **interconnected self-contained mains powered/Battery backed smoke/heat alarms (Grade D)**. The requirements are functionally similar but reference different standards, creating a potential compliance conflict.

• **Alignment**: Both documents strongly align on general principles: compliance with statutory regulations, high-quality workmanship, detailed coordination, and testing/certification. Specific technical agreements include: segregation of fire-resistant cables, 60-minute fire rating for LV switchboard enclosures, Form 4a classification for the main LV switchboard, and the requirement for access control to be disabled by the fire alarm.

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULARS SCOPE OF WORKS.pdf (Comp)	Status
Fire Blanket Size	1.2m by 1.8m	Not Specified	■■ B is missing
Service Void Height (to avoid extra detection)	800mm	Not Specified	■■ B is missing
Smoke Duct Termination Distance	5 metres from escapes/air intakes	Not Specified	■■ B is missing
Smoke Duct Fire Rating	60 mins Integrity & Insulation	Not Specified	■■ B is missing
Main LV Switchboard Fault Level	65kA for 1.0 second	Not Specified	■■ B is missing
Sub-Distribution Fault Level	25kA for 1.0 second	Not Specified	■■ B is missing
RCD Rating	30mA, 9kA SCCB	Not Specified (but implied by IS1■■:2■■3)	■■ B is less specific
Arc Fault Detection Voltage	All final single-phase circuits not exceeding 230V	Not Specified	■■ B is missing
Linear Heat Tape Air Gap	Not Specified	Min 25mm & Max 150mm from ceiling	■■ B is missing
Cable Fire Performance (General)	Dca – S2 ,d2 ,a2 (or per Fire Cert)	Dca	■ Agreement (B is a subset of A's requirement)

Enclosure Fire Rating (LV Switchboard)	60 minutes	60 minutes	■ Agreement
Switchboard Classification (Main LV)	Form 4a	Form 4a	■ Agreement
System Voltage	400/230V, 3 phase	400/230V, 3 Phase	■ Agreement

3. Action Items (Draft TQ)

1. **TQ-FA-01: Fire Alarm Standard & Residential System Type**

* **Query**: Document A (LDA) requires the fire alarm system to comply with EN54-13 and residential units to have a Grade D, LD1 system per BS 5839-6. Document B (EDC) requires compliance with IS 3218:2013 and specifies interconnected self-contained Grade D alarms for dwellings. Please confirm the governing standard for system design, installation, and certification, and the exact specification for the residential unit alarm system to ensure a single, unambiguous requirement.

2. **TQ-PRM-01: Missing Technical Parameters**

* **Query**: Document A specifies several key technical parameters not found in Document B (e.g., fire blanket size 1.2x1.8m, smoke duct 5m termination rule, 60-minute duct rating, switchboard fault levels). Please confirm if these LDA parameters are to be included in the works scope. If not, please provide the definitive values to be used.

3. **TQ-CBL-01: Cable Fire Performance Specification**

* **Query**: Document A specifies cable performance as "Dca – S2, d2, a2 or as specified in the Fire Certificate." Document B states "Dca." Please confirm the definitive required cable classification (Dca-s2,d2,a2 or Dca only) to ensure compliance with the Fire Certificate and correct procurement.

Topic: Lifts

1. Analysis Summary

• **Conflict**: No direct contradictions identified. Document A (LDA) assigns responsibility for lift-related wiring interfaces to the Developer's design team. Document B (EDC) assigns specific wiring and coordination tasks to the Electrical Contractor. This creates a potential **responsibility overlap/interface risk** rather than a direct technical contradiction.

• **Alignment**: Both documents implicitly agree that wiring, power supply, and coordination are required for the lift installation. Document B provides specific electrical requirements that fulfill the general interface requirement stated in Document A.

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULARS & SCOPE OF WORKS.pdf (Comp)	Status
Lift Car Internal Dimension (Approx)	1100 x 2100mm	Not Specified	■■ Info only in LDA
Permanent Power Supply Rating	Not Specified	63A 3ph	■■ Info only in EDC

3. Action Items (Draft TQ)

• **TQ 01 - Clarification of Wiring Responsibility**: Document A, Section 4.15.1 states the Developer's design team is responsible for interfaces and "allowance for all wiring" for lift services. Document B, Section 22 requires the Electrical Contractor to "allow for all wiring and attendances associated with the lift installation." Please clarify the definitive scope split and responsibility matrix for the design, provision, and installation of all lift-associated wiring, containment, and final connections to the lift control panel to avoid

duplication or gaps.

Topic: Lighting

1. Analysis Summary

• **Conflict**: A significant conflict exists regarding the **cable type and containment for lighting circuits in residential units**. LDA specifies **2.5 or 4.0 sq.mm PVC insulated cable in hard drawn round PVC conduit**. EDC specifies **1.5mm NHXMH-J/Twin and Earth cable** (in steel conduit/trunking for common areas, but the residential unit requirement is not explicitly overridden). This is a fundamental material and installation method discrepancy.

• **Alignment**: Both documents are well-aligned on high-level principles: compliance with SLL/EN 12464 standards, use of LED luminaires, the need for formal lighting design submissions, and adherence to IS 3217 for emergency lighting. They also both mandate RCD protection for specific circuits (bathrooms/external).

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULARS & SCOPE OF WORKS.pdf (Comp)	Status
Lighting Circuit Rating	10A radial circuits	Not explicitly stated	■■ B is silent
LED Test Current (lm output)	350mA	Not stated	■■ B is silent
LED Efficacy (Warm White)	125 LL/W @ 3000K	Minimum 100 lm/W	■ B is less specific, A is stricter
LED Efficacy (Neutral White)	135 LL/W @ 4000K	Minimum 100 lm/W	■ B is less specific, A is stricter
LED Drive Current (Efficacy spec)	700mA	Not stated	■■ B is silent
External Light CCT	3000K maximum	Not stated	■■ B is silent
Public Lighting Duct Diameter	125mm	107mm (min. external diameter)	■■ **Conflict** - Specified size differs
Switch Rating	Not explicitly stated	20A	■■ A is silent
Switch Height	Not explicitly stated	1100mm AFFL	■■ A is silent
Lighting Cable Size (Residential)	2.5 or 4.0 sq.mm	1.5mm (min.)	■■ **Major Conflict** - Cable type & size differ
RCD Rating (Bathrooms/External)	30mA	30mA	■ Agreement
External Light RCBO Height Trigger	Not stated	< 2.8m AFFL	■■ A is silent
External Duct Wall Thickness	Not stated	5mm (min.)	■■ A is silent
External Duct Burial Depth (Standard)	Not stated	450mm	■■ A is silent
External Duct Burial Depth (Road)	Not stated	750mm	■■ A is silent
External Duct Sand Bed (Below)	Not stated	50mm	■■ A is silent
External Duct Sand Bed (Sides)	Not stated	25mm	■■ A is silent
External Duct Sand Cover	Not stated	150mm	■■ A is silent
Warning Tape Depth	Not stated	300mm below grade	■■ A is silent
Backfill Stone Size	Not stated	>50mm not permitted	■■ A is silent
CCTV Min. Illumination (Internal)	Not stated	1 lux	■■ A is silent
CCTV Min. Illumination (External)	Not stated	0.1 to 0.4 lux	■■ A is silent

3. Action Items (Draft TQ)

Technical Query 01 - Lighting Installation in Residential Units

* **Reference:** LDA.pdf Section 4 (Residential Units wiring) vs. EDC Section 12 & LIGHTING CONTROLS.

* **Issue:** A direct conflict exists regarding the specification for final lighting wiring within residential apartments. LDA calls for **2.5 or 4.0 sq.mm PVC insulated cable in hard drawn round PVC conduit**. EDC calls for a minimum of **1.5mm NHXMH-J/Twin and Earth cable** (CPR compliant).

* **Query:** Please clarify which specification governs the installation of final lighting circuits within the residential units. Should the Contractor proceed with the cable type, size, and containment system specified in LDA or EDC?

* **Required For:** Procurement and installation methodology.

Technical Query 02 - Public Lighting Ducting

* **Reference:** LDA.pdf Section 56 (125mm duct) vs. EDC Section 14 (107mm min. diameter duct).

* **Issue:** The specified diameter for red underground ducting for public lighting differs between documents.

* **Query:** Please confirm the required nominal external diameter for the red HDPE ducting to be used for the public lighting installation: **125mm** (per LDA) or **107mm minimum** (per EDC).

* **Required For:** Procurement of ducting.

Topic: Mechanical/HVAC

1. Analysis Summary

• **Conflict**: No direct technical contradictions were identified. The documents cover complementary scopes: Document A (LDA) defines mechanical/HVAC system design and installation requirements, while Document B (EDC) defines the electrical scope of works, including power supply, bonding, and controls for the mechanical systems. They are interdependent but not conflicting.

• **Alignment**: Strong alignment exists in the requirement for electrical isolation of mechanical plant (LDA Section 38 & EDC Section 19) and the integration of fire/smoke control systems with electrical interfaces (LDA Section 3.5.10 & EDC Section on Input/Output Modules).

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULARS SCOPE OF WORKS.pdf	Status
Pipe Pressure Drop Max	300 Pa/m	Not Specified	■ Scope Gap
Pipe Velocity Max	1.5 m/s	Not Specified	■ Scope Gap
Branch Pipe to Vent Max Length	3 m	Not Specified	■ Scope Gap
Vent Pipe Height (Standard)	300 mm above roof	Not Specified	■ Scope Gap
Vent Pipe Height (Near Intake)	900 mm above roof	Not Specified	■ Scope Gap
Pre-insulated Pipe Max Diameter	26 mm	Not Specified	■ Scope Gap
Heating Pipe Grade Threshold	80 mm	Not Specified	■ Scope Gap
Heating Pipe Pressure Loss (Header)	50 Pa/m	Not Specified	■ Scope Gap
Heating Pipe Pressure Loss (Main)	200 Pa/m	Not Specified	■ Scope Gap
Heating Pipe Pressure Loss (Branch)	150 Pa/m	Not Specified	■ Scope Gap
Comfort Cooling Dead Band	2°C	Not Specified	■ Scope Gap
Door Undercut (Ventilation)	10 mm	Not Specified	■ Scope Gap

Wall Vent Min Flow Rate	52 l/s	Not Specified	■ Scope Gap
Unoccupied Ventilator Free Area	0.09 m²	Not Specified	■ Scope Gap
Tank Room Damper Leakage	5 m³/m²/hr @ 50 Pa	Not Specified	■ Scope Gap
Tank Room Damper U-Value	0.4 W/m²K or better	Not Specified	■ Scope Gap
Tank Room Fan Flow Rate	100 l/s	Not Specified	■ Scope Gap
Cable Cleat Fixing Centres	Not Specified	600 mm	■ Scope Gap
Mechanical Load Isolator Threshold	Not Specified	> 2 kW	■ Scope Gap
External Lighting Duct Diameter	Not Specified	107 mm (min)	■ Scope Gap
External Lighting Duct Wall Thickness	Not Specified	5 mm (min)	■ Scope Gap
Sand Bedding Depth (Below)	Not Specified	50 mm (min)	■ Scope Gap
Sand Bedding Depth (Sides)	Not Specified	25 mm (min)	■ Scope Gap
Control Voltage (AOVs)	Not Specified	24V	■ Scope Gap
Generator Warranty (Maintenance)	Not Specified	10 years	■ Scope Gap

Status Key:

■ Scope Gap = Parameter is specified in one document but is outside the core scope of the other. This is an expected finding, not a conflict.

3. Action Items (Draft TQ)

No technical queries are required to resolve contradictions, as no conflicts were found. The primary action is to ensure the **Electrical Contractor's scope (EDC)** fully accommodates all control, power, and interface requirements specified within the **Mechanical/HVAC specification (LDA)**, particularly for:

1. Legionella protection system controls (Section 3.3.9).

2. Tank room ventilation fan/damper controls (Section 3.5.5).

3. Integration of heating system pumps, valves, and controllers.

4. Provision of isolators for all mechanical plant as per EDC Section 19.

A coordination review between the M&E; designers is recommended to verify all interfaces are captured on drawings and in the combined specification.

Topic: Plumbing

1. Analysis Summary

• **Conflict**: No direct contradictions were identified. The documents cover fundamentally different scopes: Document A (LDA) is a comprehensive building specification focusing on architectural, plumbing, and drainage design, while Document B (EDC) is a narrow electrical scope of works. The requirements in each are complementary rather than conflicting.

• **Alignment**: There is clear alignment on the need for compliance with statutory regulations (Building Regulations, BCAR, etc.). Both documents implicitly agree on the necessity of proper bonding of water services (Document A details the water systems, Document B requires bonding of them). The requirement for surge protection on incoming water mains (Document A) aligns with the electrical bonding requirements (Document B).

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULARS	Status (Comp) SCOPE OF WORKS.pdf
Waterproofing Upstand Height	150mm	Not Specified	■ Missing in B
Laminate Flooring Thickness	8-10mm	Not Specified	■ Missing in B
Pre-insulated Pipe Max Diameter	26mm	Not Specified	■ Missing in B
Hot Water Capacity (Test)	200 Litres at 40°C	Not Specified	■ Missing in B
Radiator Steel Thickness	1.5mm / 3mm total	Not Specified	■ Missing in B
Cold Water Legionella Trigger Temp	20°C	Not Specified	■ Missing in B

Note: Document B contains no plumbing-specific numerical parameters to compare. All parameters are missing from its scope.

3. Action Items (Draft TQ)

No technical query is required to resolve a conflict, as none exist. However, an **Information Request** is recommended to ensure coordination:

TQ Draft:

Subject: Coordination of Plumbing and Electrical Bonding Details

Query: The electrical scope (EDC) requires bonding of all DHWS, cold water, and heating pipes. Please confirm that the detailed routing, material specifications, and access points for these services as per the LDA specification have been issued to the electrical contractor to facilitate correct bonding installation and that all required bonding lugs/connections are detailed on the M&E; coordination drawings.

Topic: Sustainability

1. Analysis Summary

• **Conflict**: No direct contradictions were identified between the two documents. Document A (LDA.pdf) is a high-level technical specification with broad sustainability and system performance requirements, while Document B (EDC.pdf) is a specific electrical scope of works focused on installation details. They operate at different levels of detail.

• **Alignment**: Both documents align on the principle of energy monitoring. Document A requires metering for PV system reporting, and Document B mandates energy meters on landlord distribution boards, supporting the overall goal of tracking consumption.

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULARS	Status (Comp) SCOPE OF WORKS.pdf
Washing Machine Noise	Max 49 dB(A)	Not Specified	■ B is silent / Missing
Overheating Temp (Bedrooms)	Max 26°C for ≤1% of sleeping hours	Not Specified	■ B is silent / Missing
Switchboard Fault Level	25kA for 1.0 sec	Not Specified	■ B is silent / Missing
RCD Rating	30mA	Not Specified	■ B is silent / Missing
RCBO Breaking Capacity	9kA	Not Specified	■ B is silent / Missing
PV Panel Warranty (Performance)	25 years	Not Specified	■ B is silent / Missing
PV Panel Warranty (Product)	10 years	Not Specified	■ B is silent / Missing

3. Action Items (Draft TQ)

- **TQ-01: Integration of Performance Specifications into Electrical Scope**

- **Query**: Document A (LDA) specifies key performance parameters (e.g., 49 dB(A) for white goods, 30mA RCDs, 25kA switchboard fault level, specific PV warranties). These are not referenced in the electrical scope of works (Document B). Please confirm that all equipment supplied and installed under the electrical works will be selected to meet or exceed the performance standards stipulated in the LDA specification. Provide a compliance statement or method for demonstrating adherence to these parameters.

Topic: General Requirements

1. Analysis Summary

- **Conflict**: The documents establish different hierarchies for resolving conflicts between specifications and standards. **Document A (LDA)** states that in the event of an inconsistency, the **Technical Monitor's direction shall be conclusive**. **Document B (EDC)** states that in the event of a conflict, the **requirements of Irish standards and regulations shall prevail** over the specification. This creates a potential procedural conflict regarding the ultimate authority for resolving technical discrepancies.

- **Alignment**: Both documents strongly align on the primacy of Irish standards (IS 10101, Building Regulations, NSAI rules) and the requirement for full compliance with ESB regulations. They also agree on the need for comprehensive testing, certification, and the provision of detailed O&M; manuals and record drawings.

2. Engineering Deltas (Parametric Comparison)

Parameter	LDA.pdf (Base)	EDC - ELECTRICAL PARTICULARS	Status
Data Cabling Max Run Length	Not Specified	90m	■ B adds a specific requirement
Lightning Protection Conductor Size	Not Specified	25mm x 3mm tape	■ B adds a specific requirement
Lightning Protection Tape Fixing Centres	Not Specified	1.20m max	■ B adds a specific requirement
Structured Cabling Category	Not Specified	Cat 6a	■ B adds a specific requirement
EV Charging Main Panel Spare Capacity	Not Specified	Spare for 5no 32A 3ph RCBOs	■ B adds a specific requirement
Conflict Resolution Authority	Technical Monitor's direction is conclusive	Irish Standards/Regulations prevail over spec	■ **Procedural Conflict**

3. Action Items (Draft TQ)

- **TQ-001 - Conflict Resolution Hierarchy**: Document A (LDA Specification, Section 1.1) states that the Technical Monitor's direction is conclusive in resolving inconsistencies. Document B (EDC Electrical Scope, IMPORTANT NOTICE) states that Irish standards and regulations prevail over the specification in the event of a conflict. Please clarify the definitive hierarchy for resolving technical discrepancies between project documents, standards, and the Technical Monitor's instructions. Which clause takes precedence?