

# Bill of Quantities

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|------------------------------------------------------|----------------------------|
| <b>Project:</b> CETB Biomass – Heating Upgrade Works | <b>Details:</b> Electrical |
| <b>Building:</b> Kinsale Community School            |                            |

| Auto code | Description | Quantity | Unit | Rate | Total |
|-----------|-------------|----------|------|------|-------|
|-----------|-------------|----------|------|------|-------|

## (00) MECHANICAL AND BMS WIRING INSTALLATION

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |      |  |  |
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|    | <b>ELECTRICAL INSTALLATION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |      |  |  |
|    | <u>ALTERNATIVE RULES FOR THE MEASUREMENT OF ELECTRICAL INSTALLATION</u>                                                                                                                                                                                                                                                                                                                                                                                                                |      |      |  |  |
|    | <u>INFORMATION REQUIRED</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |      |  |  |
| 1  | 1. Minimum information which must be shown on the drawings that accompany this section – scope and location of work.                                                                                                                                                                                                                                                                                                                                                                   |      |      |  |  |
| 2  | 2. The tenderer is referred to the Electrical Services Drawings and Electrical Specification accompanying this Pricing Document.                                                                                                                                                                                                                                                                                                                                                       |      |      |  |  |
| 3  | 3. Mandatory information to be provided – detailed description of the system giving specified output requirements.                                                                                                                                                                                                                                                                                                                                                                     |      |      |  |  |
|    | <u>GENERALLY</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |      |  |  |
| 4  | 1. The tenderer shall note that this section is measured in accordance with ARM4 Supplement 2 – Agreed Alternative Rules for the Measurement of Services Installations                                                                                                                                                                                                                                                                                                                 |      |      |  |  |
| 5  | 2. The tenderer is referred to the Electrical Services Drawings and Electrical Specification accompanying this Pricing Document.                                                                                                                                                                                                                                                                                                                                                       |      |      |  |  |
| 6  | 3. The tenderer is referred to the Works Requirements accompanying this Pricing Document.                                                                                                                                                                                                                                                                                                                                                                                              |      |      |  |  |
| 7  | 4. For preliminary particulars, please refer to tender documentation.                                                                                                                                                                                                                                                                                                                                                                                                                  |      |      |  |  |
|    | <u>NOTES:</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |      |  |  |
| 8  | 1. All cabling shall be supplied complete with containment, supports, identification, terminations and testing.                                                                                                                                                                                                                                                                                                                                                                        |      | Note |  |  |
| 9  | 2. Contractor shall coordinate all interfaces with existing school infrastructure and maintain full operational continuity where required.                                                                                                                                                                                                                                                                                                                                             |      | Note |  |  |
| 10 | 3. All works shall comply with current ETCI regulations, BS 7671, and relevant Irish Building Regulations.                                                                                                                                                                                                                                                                                                                                                                             |      | Note |  |  |
| 11 | 4. BMS integration shall be fully compatible with existing school systems and include full commissioning and operator training.                                                                                                                                                                                                                                                                                                                                                        |      | Note |  |  |
| 12 | 5. Underground ducting and external trenching works excluded unless otherwise stated.                                                                                                                                                                                                                                                                                                                                                                                                  |      | Note |  |  |
|    | <b>MECHANICAL AND BMS WIRING INSTALLATION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |      |  |  |
| 13 | <i>System; all in accordance with the Works Requirements Documents</i>                                                                                                                                                                                                                                                                                                                                                                                                                 |      |      |  |  |
|    | <i>All electrical work shall be earthed and bonded in accordance with E.T.C.I regulations. This will include the installation of appropriate bonding to all new mechanical services and sanitary ware as required. It will not compromise the firestopping, structural integrity, sound insulation, thermal insulation or any other related matters. The contractor must provide all relevant certification on completion; all in accordance with the Works Requirements Documents</i> |      |      |  |  |
|    | <b>LOW VOLTAGE (LV) POWER DISTRIBUTION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |      |  |  |
| 14 | Supply, install, terminate, test and commission LV power cabling from existing electrical distribution board to biomass container and associated plant, including all cable containment, glands, lugs, supports, labelling, fire stopping, and making good, complete and operational.                                                                                                                                                                                                  | 1.00 | Item |  |  |
| 15 | Connection of LV supply to new pumps, motors and plant equipment installed within school boiler houses under this contract, including final terminations, isolators, local disconnects, and all associated accessories.                                                                                                                                                                                                                                                                | 1.00 | Item |  |  |
| 16 | Testing, insulation resistance testing, continuity testing and certification of all LV circuits associated with the works.                                                                                                                                                                                                                                                                                                                                                             | 1.00 | Item |  |  |

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**(00) MECHANICAL AND BMS WIRING INSTALLATION**

(Continued)

|    |                                                                                                                                                                                                                             |      |      |  |  |
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|    | <b><u>EXTRA LOW VOLTAGE (ELV) CABLING</u></b>                                                                                                                                                                               |      |      |  |  |
| 17 | Supply, install, terminate and test ELV control cabling to new pumps, sensors, actuators and equipment forming part of the biomass installation, including all containment, identification, ferrules and terminations.      | 1.00 | Item |  |  |
| 18 | Interface cabling between biomass plant controls and associated field devices, including safety interlocks and control signals.                                                                                             | 1.00 | Item |  |  |
|    | <b><u>CABLE MANAGEMENT SYSTEMS</u></b>                                                                                                                                                                                      |      |      |  |  |
| 19 | Supply and install cable containment systems for new LV and ELV cabling including cable tray, cable ladder, trunking, conduits, supports, brackets and fixings complete, excluding underground ducting (by others).         | 1.00 | Item |  |  |
| 20 | Provision for supports, hangers, wall brackets and structural fixings to suit containment routes within plant rooms and boiler house areas.                                                                                 | 1.00 | Item |  |  |
| 21 | Fire stopping to all cable penetrations through fire-rated elements including intumescent sealing systems and certification.                                                                                                | 1.00 | Item |  |  |
|    | <b><u>BUILDING MANAGEMENT SYSTEM (BMS) – MODIFICATION WORKS</u></b>                                                                                                                                                         |      |      |  |  |
| 22 | Modification of existing school boiler house BMS control panels to accommodate additional input/output (I/O) points where capacity allows, including reconfiguration, re-termination, software updates and testing.         | 1.00 | Item |  |  |
| 23 | Integration of new biomass boiler plant and associated equipment into existing BMS including point mapping, graphics updates, alarm configuration and trend setup.                                                          | 1.00 | Item |  |  |
| 24 | Retention and reuse of existing power and control cabling to existing BMS panels where applicable.                                                                                                                          | 1.00 | Item |  |  |
|    | <b><u>REPLACEMENT BMS PANELS</u></b>                                                                                                                                                                                        |      |      |  |  |
| 25 | Supply, install, terminate, configure and commission replacement BMS control panels where existing panels cannot be modified, including enclosures, controllers, power supplies, I/O modules, terminal rails and labelling. | 1.00 | Item |  |  |
| 26 | Transfer and reconnection of all existing field cabling to new BMS panels including identification, testing and reinstatement of control functionality.                                                                     | 1.00 | Item |  |  |
| 27 | Provision of complete software configuration, graphics integration and programming of new BMS panels to match existing system architecture.                                                                                 | 1.00 | Item |  |  |
|    | <b><u>COMMISSIONING</u></b>                                                                                                                                                                                                 |      |      |  |  |
|    | <b><u>Electrical Commissioning</u></b>                                                                                                                                                                                      |      |      |  |  |
| 28 | Testing, inspection and commissioning of all electrical installations associated with biomass plant including LV and ELV systems, complete with certification in accordance with current regulations.                       | 1.00 | Item |  |  |
| 29 | Functional testing of all electrical interfaces, interlocks, safety devices and emergency shutdown circuits.                                                                                                                | 1.00 | Item |  |  |
|    | <b><u>BMS Commissioning</u></b>                                                                                                                                                                                             |      |      |  |  |
| 30 | Full commissioning of Building Management System including configuration, point-to-point testing, calibration, and verification of all control sequences associated with biomass installation.                              | 1.00 | Item |  |  |
| 31 | Development and commissioning of BMS graphics, trend logs, alarms and remote access functionality.                                                                                                                          | 1.00 | Item |  |  |
| 32 | Witness testing in presence of client/engineer including demonstration of system operation and fault simulation.                                                                                                            | 1.00 | Item |  |  |
| 33 | <i>General earthing and bonding</i>                                                                                                                                                                                         |      |      |  |  |

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**(00) MECHANICAL AND BMS WIRING INSTALLATION** (Continued)

|    |                                                                                                                                                                                                                                                                                                                    |      |      |  |  |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|--|--|
| 34 | Earthing and bonding to all above installations                                                                                                                                                                                                                                                                    |      | item |  |  |
| 35 | <i>General</i>                                                                                                                                                                                                                                                                                                     |      |      |  |  |
| 36 | Include for marking of holes and chases.                                                                                                                                                                                                                                                                           | 1.00 | item |  |  |
| 37 | Include for testing and commissioning all plant in this section.                                                                                                                                                                                                                                                   | 1.00 | item |  |  |
| 38 | Include for testing as described                                                                                                                                                                                                                                                                                   | 1.00 | item |  |  |
| 39 | Include for protection against damage.                                                                                                                                                                                                                                                                             | 1.00 | item |  |  |
| 40 | Include for testing and repair of existing installations                                                                                                                                                                                                                                                           | 1.00 | item |  |  |
| 41 | Include for leaving clean all work and equipment in this section.                                                                                                                                                                                                                                                  | 1.00 | item |  |  |
| 42 | Include operating and maintenance manuals                                                                                                                                                                                                                                                                          | 1.00 | item |  |  |
| 43 | Include working drawings                                                                                                                                                                                                                                                                                           | 1.00 | item |  |  |
| 44 | Include co-ordination drawings                                                                                                                                                                                                                                                                                     | 1.00 | item |  |  |
| 45 | Include as-built drawings                                                                                                                                                                                                                                                                                          | 1.00 | item |  |  |
| 46 | Include identification plates, labels and the like                                                                                                                                                                                                                                                                 | 1.00 | item |  |  |
| 47 | Include builders work                                                                                                                                                                                                                                                                                              | 1.00 | item |  |  |
| 48 | Include firestopping and other associated fire protection work                                                                                                                                                                                                                                                     | 1.00 | item |  |  |
| 49 | Include for all other works as described in the Drawing or Specification.<br>Include full break-down of quantity and rates below. Add additional pages as appendix if necessary                                                                                                                                    | 1.00 | item |  |  |
| 50 | Include for Operational instructions for lighting Controls in each room as per the Specification Document                                                                                                                                                                                                          | 1.00 | item |  |  |
| 51 | Include for Labelling each item as per the Specification Document                                                                                                                                                                                                                                                  | 1.00 | item |  |  |
|    | <u>Provide for all labour, materials, plant and all items which in the tenderers opinion are not specifically allowed for in this section of the works but which can be reasonably inferred from the works requirements as being necessary for the execution and completion of the works. – (List items below)</u> |      | Note |  |  |
| 52 |                                                                                                                                                                                                                                                                                                                    | 1.00 | item |  |  |
| 53 |                                                                                                                                                                                                                                                                                                                    | 1.00 | item |  |  |
| 54 |                                                                                                                                                                                                                                                                                                                    | 1.00 | item |  |  |
| 55 |                                                                                                                                                                                                                                                                                                                    | 1.00 | item |  |  |
| 56 |                                                                                                                                                                                                                                                                                                                    | 1.00 | item |  |  |
| 57 |                                                                                                                                                                                                                                                                                                                    | 1.00 | item |  |  |
| 58 |                                                                                                                                                                                                                                                                                                                    | 1.00 | item |  |  |
| 59 |                                                                                                                                                                                                                                                                                                                    | 1.00 | item |  |  |

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(00) MECHANICAL AND BMS WIRING INSTALLATION (Continued)

**COLLECTION**

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| Page 2: | 0 |
| Page 3: | 0 |

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| (00) MECHANICAL AND BMS WIRING INSTALLATION<br>Carried to Summary: | 0 |
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| Report Summary | 0 |
|----------------|---|

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**COLLECTION SUMMARY**

**PAGE NO**

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| (00) MECHANICAL AND BMS WIRING INSTALLATION | 1 – 3 | 0        |
| <b>Total Amount:</b>                        |       | <b>0</b> |