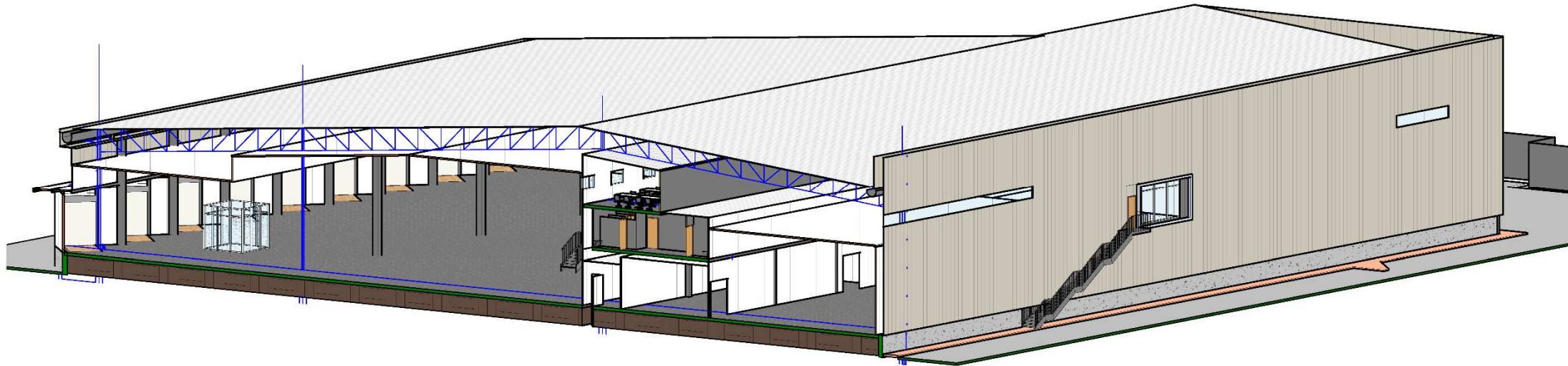


# Sundale Dairy Expansion ELIDZ Zone1A

CONTRACT NO.:

## DESIGN SPECIFICATIONS & CRITERIA





Project	Discipline	Type	Drawing No.	Rev.
ELIDZ	ARC	SK	0000	0

## A.1 Ceilings

### Canteen and Ablutions - (Non Process areas)

'Non-process' rooms on the Ground floor and upper floor ablutions and canteens to be finished with 600 x 600mm suspended vinyl clad gypsum ceiling tiles laid in exposed aluminium T-grid suspended from floor structure above. Rooms with no floor above, T-grid to suspend from a timber joist structure

### Cheese Factory

All 'process/clean' areas to have suspended insulated ceiling panels, with sealed joints. Blending/Cooking Room and CL room to have a trafficable ceiling.

Catwalk to be installed by tenant.

## A.2 Walls

### Canteen and Ablutions - (Non Process areas)

Canteen, Change Room and Ablution spaces are located on the First and Second floor; in-between the Coldroom and cheese factory double volume spaces.:

1. 100mm Insulated wall panels between the Process and Non-Process areas.
2. Non-process Dry areas to be seamless painted 90mm dry wall partition with aluminium top track, with 200 high skirting. Plascon "Wall n All" in light tint colour
3. Non-Process Wet areas to 90mm Moisture Resistant Silicone impregnated dry wall partitioning be sealed with Tal Superflex flexible waterproof membrane capable of accommodating normal structural movement in the background and suitable for waterproofing internal wet areas. Continuous membrane from underside of floor finish up the wall and flush with the ceiling. Walls to be tiled up to ceiling level and bonded with appropriate adhesive and movement joints.
4. Showers to be lined with 21mm Marine plywood sealed in waterproofing as described above and tiled as ditto

### Cold Room and Cheese Factory:

Cold store, Product dry store and all Process areas to be Insulated Wall panels. Thickness of wall between 50mm to 100mm, depending on the internal thermal requirements of the Room.

Insulated panel from floor to ceiling with finishes, flashing and trims to be all Chromadek. No aluminium.

Wall protection: Bump rails and Bollards to be provided at Forklift and pallet circulation areas. Rails and Bollards to be HD Galvanised, de-greased, well primed and painted by hand.

Concrete curb to be provided in specified areas in the Cheese factory, as per 'RoomMatrix'. Curb to be finished with Polyurethane.

1. External Insulated Walls and Ceilings  
Insulation: Minimum 100mm 15dv Polystyrene Core Walls  
Finish: 0.5mm Frost White Z-200 Chromadek  
Joint System : Tongue and Groove  
Thermal Conductivity (K Value) : 0.04 W/mK (Maximum)  
Density :  $\pm 15 \text{ kg/m}^3$   
Fire Rating: Fire Retardant Expanded Polystyrene  
Columns to be cladded and insulated  
Ceilings to allow for foot traffic
2. Internal Insulated Walls

Insulation: Minimum 50mm 15dv Polystyrene Core Walls  
Finish: 0.5mm Frost White Z-200 Chromadek  
Joint System : Tongue and Groove  
Thermal Conductivity (K Value) : 0.04 W/mK (Maximum)  
Density :  $\pm 15 \text{ kg/m}^3$   
Fire Rating: Fire Retardant Expanded Polystyrene

3. Insulated Fire Walls (as per Mechanical Eng spec)  
Insulation: Minimum 100mm Polyphen Core Walls  
Finish: 0.58 mm Chromadek Frost White (Z-200 Zinc Substrate)  
Joint System : Tongue and Groove  
Joint Sealants : Approved Fire Stop Sealants to meet rating required (Hilti or equivalent)  
Thermal Conductivity (K Value) : 0.037 W/mK (Maximum)  
Density :  $\pm 50 \text{ kg/m}^3$   
Fire Rating: International Class 1 (FM, or equivalent SANS Approved)  
Fire Rating Required (Minutes) : As per relevant Regulations and Design requirement  
Columns to be cladded and insulated

### **A.3 Floors:**

#### Canteen and Ablutions - (Non Process areas)

Structure: 2 overlapping layers of marine plywood screw fixed together on 50 x 150 SAP joists @ 405c/c supported on steel structure to Engineers detail.

Finishes: Porcelain tiles and Heavy-duty Vinyl sheet (2mm Marley Supaflex vinyl sheet).

Cheese Factory Polyurethane finish on Screed sloped to floor drains and channels on flat Concrete slab. As per Engineers specification. Floors to slope at minimum 1%.

Appropriate sealant to be used around the floor drains which will be watertight, hygienic and tolerant.

Cold Room Polyurethane finish on Concrete slab sloped to a continues centralised floor channel.

Appropriate sealant to be used around the floor drains which will be watertight, hygienic and tolerant.

### **A.4 Doors**

Internal doors (non process) to be standard flush panel 2032 x 813mm solid core doors with concealed edges finished with primer and two coats "velvaglo" or similar. Change rooms and toilets to be undercut as required.

External doors to be hardwood 2032 x 813mm FLBB doors with flush panel internally in hardwood frame set in steel sub frame.

All doors in process/clean areas to be insulated standard/Cold Room doors faced both sides with Chromadek and with perimeter trim. No Aluminium. Sizes vary

Doors in to have adequate Kick plates, push plates and protection to be stainless steel.

### **A.5 Openings in Envelope –**

Roller Shutter doors 3m high x 3m wide galvanised and manually operated by chain slatted doors. Door openings will be formed and framed using steel channel sections. The doors will be protected by steel bollards placed internally and externally on either side of the door opening.

Dock levellers. Sectional door with 38mm thick panel, with pre-painted skins, hot dipped galvanised steel with rigid polyurethane insulation core. Wall opening to be 2.2m wide by 2.5m high. Doors to have robust Curtain Dock Seal to create a sealed link between a docked truck and the Cold Room.

## **A.6 Openings in Envelope - Windows**

Generally, no openings in the Cheese and Cold-room will be made for windows. Windows fixed onto side cladding rails. Windows in office accommodation to be powder coated aluminium in accordance with SANS 1578 parts 1 & 2 System to meet requirements of AAAMSA performance and design loading of SANS 10160.

External Openable Windows to be aluminium Sheerline 36. External Curtain wall to be Sheerline 90

## **A.8 Roof Sheeting and Insulation**

Huletts Aluminium 'Global Roofing Solutions' 0,9mm thick Ziptech 420 Profile aluminium roof sheeting and accessories with stucco embossed mill finish, concealed fixed through insulation to galvanised cold rolled purlins with insulation tape between purlin and roof sheet, with 'Ziptech' Aluminium Halts fixed with stainless steel screws. Installation region: from 0m to 400m of the coast – C5 High Corrosion Risk. All in strict accordance with the manufacturer's instructions.

Isover 75mm Factorylite insulation laid over purlins in single lengths and supported on galvanised straining wires at 300mm centres.

## **A.9 Gutters and Downpipes**

Internal gutter: GRP half-round gutters with integral fibreglass drop-outs at 12m c/c's with 'Geberit Pluvia' rainwater head at base of each drop-out. Each head to be serviced by 2 no. 'Geberit Pluvia' continuous HDPE welded pipes, suspended to approved Geberit detail from gutter support structure. Gutter support would be as per engineers specification

Rainwater heads and downpipes are located internal to the building on east and west extremities of the gables.

External gutter: GRP half-round gutters with integral fibreglass drop-outs with standard UPVC Downpipes

## **A.10 Side Cladding**

Standard sheeting Huletts Aluminium GRS BR7 profile, 0.8mm thick with embossed PVDF finish on exterior and standard backing coat fixed to galvanised cold rolled steel girt rails with insulation tape between girt and cladding with stainless steel screws. C5 High Corrosion Risk. All in accordance with the manufacturer's instructions. Cladding to vary from eaves to finished floor level and eaves to ceiling level.

Coloured sheets- As described above with Chromadek Azure blue finish

Translucent sheeting to be Modek opal polycarbonate sheeting with profile to match side cladding with Azure blue Chromadek flashing

No side wall insulation is provided.

## **A.11 Fencing**

1.8m high Palisade fence, Pales to be welded and Galvanised in accordance to SANS 121. Steel square posts to be cast in Concrete foundations. Submerged section of posts to be painted in Bitumen.



## **M.1 Design Criteria and Parameters**

The design criteria applied to the mechanical engineering services shall include the following, namely :

- ☐ Capital costs
- ☐ Operational and maintenance requirements and costs
- ☐ Ease of functionality, operation and maintenance
- ☐ Compliance with general energy efficiency and / or sustainability standards

Furthermore, the mechanical engineering services shall be designed in accordance with, but not limited to, the current versions of the following, namely :

- ☐ the South African National Standard : Code of Practice for “The Application of the National Building Regulations” i.e. those included in the “National Building Regulations and Building Standards Act, 1977 (Act 103 of 1977)”, as published in the Government Gazette, number 31084, dated 30 May 2008, which became effective as of 01 October 2008, and known as “SANS 10400 - 2010”
- ☐ the Occupational Health and Safety Act, 1993 (Act 85 of 1993),
- ☐ SANS 204-1 : 2008 - Energy Efficiency in Buildings : Part 1 - General Requirements,
- ☐ SANS 204-2 : 2008 - Energy Efficiency in Buildings : Part 2 - The Application of the Energy Efficiency Requirements for Buildings with Natural Environmental Control,
- ☐ SANS 204-3 : 2008 - Energy Efficiency in Buildings : Part 3 - The Application of the Energy Efficiency Requirements for Buildings with Artificial Ventilation or Air-conditioning,
- ☐ South African National Standard : SANS 10142-1: 2003 - The Wiring of Premises : Part 1 - Low-voltage Installations
- ☐ the current version of the South African Bureau of Standards : Code of Practice for “Automatic Sprinkler Installations for Fire Fighting Purposes”, Edition 1 : 2000, which became effective as of 17 March 2000, and known as “SABS 0287 - 2010”, together with subsequent amendments
- ☐ The documentation released by the Automatic Sprinkler Inspection Bureau (Pty) Ltd, entitled “ASIB Twelfth Edition Rules for Automatic Sprinkler Installations, (2018)”
- ☐ the current version of the South African Bureau of Standards : Code of Practice for “Water Supplies and Drainage for Buildings – Part 1 : Water Supply Installations for Buildings”, Edition 2.1 : 2004, and known as “SANS 10252 -1 : 2004”, together with subsequent amendments
- ☐ the current version of the South African Bureau of Standards : Code of Practice for “Fire Detection and Alarm Systems for Buildings - System Design, Installation and Servicing”, Edition 3.2 : 2012, and known as “SABS 10139 - 2012”, together with subsequent amendments
- ☐ the current version of the South African Bureau of Standards : Code of Practice for “Fire Protection for Electronic Equipment Installations”, Edition 2 : 2015, and known as “SANS 246 - 2015”, together with subsequent amendments
- ☐ the current version of the South African Bureau of Standards : Code of Practice for “Gaseous Fire-Extinguishing Systems”, known as “SANS 14520”, together with subsequent amendments
- ☐ any other relevant by-laws of the Local Authorities.

All apparatus, components, parts, fittings and materials supplied and / or installed, whether specifically specified herein or not, shall conform in respect of quality, manufacture, tests and performance with the requirements of the appropriate current South African (SANS) or British Standard Specifications (BS) and Addenda thereto, except where otherwise required by this specification or permitted by approval of the Client / Employer, in writing.

All materials and workmanship, which may, in the opinion of the Client / Employer, be inferior to that specified for the Work, will be condemned. All condemned material and workmanship must be replaced or rectified as the case may be, to the satisfaction of the Client / Employer.

Any fitting or item of equipment not specifically mentioned but obviously necessary for the successful completion of the installation is to be included so as to form a complete working installation.

## **M.2 Air-conditioning**

### *M2.1 Auxiliary and Office-related Buildings*

Air-conditioning shall be air cooled, inverter split type systems (Daikin or similar approved).

### *M2.2 General*

External condenser units shall have a secondary corrosion resistant protection coating (Blu-chem or similar approved).

All air-conditioning units shall be provided with wired type controls.

## **M.3 Fire Protection**

### *M3.1 General*

The site and building are to be designed and constructed in accordance with the National Building Regulations SANS 10400 "Part T".

### *M3.2 Fire Appliance Water Supply*

Single metered connection to each site / Tenant, separating into domestic and firefighting (fire appliance) systems. The fire fighting main is to be connected to a dual booster connection (accessible to the Fire Brigade at the site entrance) with external fire hydrants, including a connection to the building for the internal fire appliance reticulation, as required.

### *M3.3 Fire Appliances*

Internal fire hydrants, fire hose reels and fire extinguishers are to be provided for a Building Occupancy :

- Offices - G1
- Cheese Factory - D2 including J2
- Cold Store - J2

Additional fire appliance requirements for process areas (once Tenant divisional walls are erected) to be catered for by the Tenant.

### *M3.4 Fire Detection*

An analogue addressable fire detection system (Category L1 for offices / general areas and Category M for factory) provided within facility in accordance with SANS 10139.

### *M3.5 Fire Sprinkler Water Supply*

Water supply for sprinklers is not metered and is provided by an existing pumped booster / storage system. Where the building sprinkler installation design requirements exceed the existing booster / storage system capacities (including Tenant requirements), the Landlord is to be verified and necessary steps to increase the booster / storage system shall take place.

### *M3.6 Fire Sprinkler Installation*

The sprinkler system shall be designed, installed and commissioned in accordance with the Automatic Sprinkler Inspection Bureau (ASIB) 12th Edition Rules, and parts thereof.

Due to the nature of the Tenants process and Cold Store areas (refrigerated areas) careful attention shall be given to the type of sprinklers being supplied and installed. The sprinkler heads provided shall be compatible with cold room environments where necessary (4°C).

Ordinary Hazard Systems shall be provided for roof / ceiling protection of internal spaces (Offices, Change Rooms etc.).

High Hazard systems shall be provided in the Process Areas, and the design requirements shall be determined by the fire risk of the respective area (minimum discharge density of 20 mm / min over an assumed maximum area of discharge 300 m<sup>2</sup>).

High Hazard systems shall be provided for the facility roof installation, and the design requirements shall be determined by the fire risk of the respective area (minimum discharge density of 20 mm / min over an assumed maximum area of discharge 300 m<sup>2</sup>).

Four (4) additional spare flanges, blanked off, shall be allowed on the sprinkler manifold for the Tenant's respective installation requirements.

#### *M3.7 Fire Piping*

All fire related pipe-work (including mains) installed within the facility shall be galvanized steel to relevant South African Standards (due to nature of production / storage facility - damp).

### **M.4 Ventilation**

Ventilation in factory areas shall be provided in terms of the stipulated minimums in SANS 10400 "Part O" and the OHS Act under the Environmental Regulations for Workplaces.

Air extraction systems shall be provided for ablution facilities, canteens and tea kitchens in accordance with SANS 10400 "Part O".

Air extraction systems shall be provided for transformer rooms and shall be designed to create the correct air-changes / flow rate, to maintain a temperature of approximately no more than 35°C.

Fresh air shall be provided for all air-conditioned spaces in accordance with SANS 10400 "Part O".

Smoke extraction will be provided for the production / factory facility in accordance with SANS 10400 "Part T" and relevant parts in EN12101 (Manual System with Master Control Panel within ICV Chamber)

### **M.5 Dock Levellers**

Dock levellers shall be designed supplied and installed in accordance with relevant SANS regulations, and shall comprise of a proposed galvanized 10 ton lift capacity dock leveller with a solid base frame, including a vehicle contact cushion seal.

### **M.6 Conduit / Cable Tray / Trunking**

#### *M6.1 General Electrical Works (Air-conditioning, Ventilation, etc.)*

All exposed air-conditioning and ventilation-related electrical conduit / cable tray / trunking shall be galvanized, orange powder-coated, including relevant bushes, locknuts, couplings, galvanized saddles, etc.

Conduit and conduit accessories / cable support systems / wire duct and mesh installations shall comply with the requirements as detailed in the Electrical Specification.

All exposed air-conditioning and ventilation-related electrical conduit / cable tray / trunking shall be galvanized, yellow powder-coated, including relevant bushes, locknuts, couplings, galvanized saddles, etc.

Conduit and conduit accessories / cable support systems / wire duct and mesh installations shall comply with the requirements as detailed in the Electrical Specification.



## **E.1. Design Criteria and Parameters**

The design criteria applied to the electrical engineering services shall include the following, namely :

- ☐ Capital costs
- ☐ Operational and maintenance requirements and costs
- ☐ Ease of functionality, operation and maintenance
- ☐ Compliance with general energy efficiency and / or sustainability standards

Furthermore, the electrical engineering services shall be designed in accordance with, but not limited to, the current versions of the following, namely :

- ☐ the South African National Standard : Code of Practice for “The Application of the National Building Regulations” i.e. those included in the “National Building Regulations and Building Standards Act, 1977 (Act 103 of 1977)”, as published in the Government Gazette, number 31084, dated 30 May 2008, which became effective as of 01 October 2008, and known as “SANS 10400 - 2010”
- ☐ the Occupational Health and Safety Act, 1993 (Act 85 of 1993),
- ☐ SANS 204-1 : 2008 - Energy Efficiency in Buildings : Part 1 - General Requirements,
- ☐ SANS 204-2 : 2008 - Energy Efficiency in Buildings : Part 2 - The Application of the Energy Efficiency Requirements for Buildings with Natural Environmental Control,
- ☐ SANS 204-3 : 2008 - Energy Efficiency in Buildings : Part 3 - The Application of the Energy Efficiency Requirements for Buildings with Artificial Ventilation or Air-conditioning,
- ☐ any other relevant by-laws of the Local Authorities,
- ☐ SANS 507-1 : (NRS 034-1 : 2007) Electricity Distribution - Guidelines for the Provision of Electricity Distribution Networks in Residential Areas (Part 1 : Planning and Design of Distribution Networks)
- ☐ SANS 10114-1 : 2005 : Interior Lighting
- ☐ South African National Standard : SANS 10142-1: 2003 - The Wiring of Premises : Part 1 - Low-voltage Installations
- ☐ “SANS 0313 - 1999 : The Code of Practice for “The Protection of Structures against Lightning”

All apparatus, components, parts, fittings and materials supplied and / or installed, whether specifically specified herein or not, shall conform in respect of quality, manufacture, tests and performance with the requirements of the appropriate current South African (SANS) or British Standard Specifications (BS) and Addenda thereto, except where otherwise required by this specification or permitted by approval of the Client / Employer, in writing.

All materials and workmanship, which may, in the opinion of the Client / Employer, be inferior to that specified for the Work, will be condemned. All condemned material and workmanship must be replaced or rectified as the case may be, to the satisfaction of the Client / Employer.

Any fitting or item of equipment not specifically mentioned but obviously necessary for the successful completion of the installation is to be included so as to form a complete working installation.

## **E.2 Bulk Electricity Service Connection**

The Dairy facility presently has an 11 000 V, 1.6 MVA bulk electricity service connection. Their present maximum demand is considerably lower than the capacity provided to them. It is anticipated that the electrical requirement of the proposed extensions to their facility, to accommodate the Cheese Factory and additional Cold Storage, will be accommodated within the spare capacity available and that the existing bulk electricity service connection need not be upgraded.

However, it remains the responsibility of the appointed Design Team to consider the electrical loads presented to themselves by the East London Industrial Development Zone and / or User (Tenant) and to confirm the electrical requirements.

Whether the bulk electricity service connection is to be upgraded or not, an application shall still be submitted to the East London Industrial Development Zone for the necessary bulk electricity service connection, for record purposes.

The East London Industrial Development Zone shall not impose any electricity service connection fees and / or electricity account deposits on the project.

If required, the project shall be responsible for the necessary extension of the existing medium voltage reticulation.

### **E.3 Medium Voltage Equipment**

It is anticipated that the existing medium voltage equipment shall suffice.

### **E.4 Medium Voltage Cables**

It is anticipated that the existing medium voltage cable installation shall suffice.

### **E.5 Power Factor Correction and Harmonic Filtration**

The Contractor shall be responsible for the design and supply of necessary power factor correction and harmonic filtration equipment, designed to service the electrical installation.

### **E.6 Low Voltage Reticulation**

The low voltage reticulation shall comprise the following, namely :

- ☐ Extension to / modification of existing Main Low Voltage Panel so as to accommodate the proposed new facility
- ☐ Main Low Voltage Panel, termed MLVP B, housed within the new facility
- ☐ A series of electrical distribution boards throughout the new facility servicing the respective load centres i.e. Cheese Factory, Cold Storage, AC Plant, Refrigeration Plant, etc. *(note : all electrical distribution boards and associated low voltage cables necessary for the User (Tenant) internal electrical installation shall be provided under this contract)*
- ☐ All main low voltage panels and respective electrical distribution boards shall be inter-connected by a low voltage cable network

Electricity feeder cables shall be Cu PVC PVC SWA ECC PVC cables, with stranded conductors.

All main low voltage panels and electrical distribution boards are to be manufactured by a reputable company, with relevant experience in the manufacturing of low voltage panels, electrical distribution boards, control panels, etc.

### **E.7 Builder's and related Works, Trench Excavations, Brick-built Enclosures (Manholes), Ducts**

The Contractor shall be responsible for the necessary co-ordination and timing of the builder's and related Works pertaining to this Contract.

All Utility Rooms shall be constructed with the necessary floor trenches for the installation of all associated electrical services.

The Contractor shall undertake all trench excavations, including backfilling and compaction, required for the electrical installation.

The Contractor shall be responsible for the provision of the brick-built enclosures (manholes).

The Contractor shall be responsible for the provision of all ducts necessary for the electrical and, telecommunications and associated installations. In summary, ducts shall be installed beneath (across) all walkways, driveways, and finished surfaces.

The ducts shall be manufactured from a high-density polyethylene with a double wall construction, allowing a corrugated outer wall finish and a smooth inner wall finish, and of the internal diameters as indicated on the attached drawings.

All ducts shall be minimum 160 mm outer diameter, with minimum 137 mm internal diameter.

## **E.8 Standby Generator Set / Uninterruptible Power Supply Installation**

The Contractor shall be not be responsible for the provision of a generator set.

The Contractor shall be not be responsible for the provision of an uninterruptible power supply unit.

## **E.9 Load Shedding / Load Curtailment**

The Buffalo City Metropolitan Municipality (BCMM) have recently directed that the East London Industrial Development Zone will no longer be exempt from any electrical load shedding implemented by themselves and / or Eskom.

Furthermore, BCMM have directed the East London Industrial Development Zone begin participating in their (BCMM) electrical load curtailment programme.

Therefore, it is imperative that all electricity users within the East London Industrial Development Zone comply with the requirement in that when directed to do so, they reduce their operating electrical load by 20 % of their base load, for the duration of the load shedding cycle.

The electrical installation of the new Dairy Facility is to be designed such that participation in this electrical load curtail programme is possible.

Furthermore, and is this project is an extension of an existing facility, it is imperative that the design of the electrical load curtailment be such that the value of the reduction in the operating electrical load be calculated on the base load of the existing and proposed facility, for the duration of the load shedding cycle.

## **E.10 Conduit and Conduit Accessories**

All flush-mounted conduit and conduit accessories shall be PVC conduit in accordance with SANS 950.

All surface-mounted conduit and conduit accessories shall be galvanised conduit type, and manufactured in accordance with SANS 162, 763 and 1007 respectively.

All exposed conduit and conduit accessories shall be galvanised, powder coated, orange.

## E.11 Conductors

All low voltage single core conductors shall be of the PVC insulated type with stranded copper conductors, rated at 600 V general service duty and manufactured in accordance with SANS 1507 - 1990.

## E.12 Lighting Installation

A lighting installation, in accordance with the relevant regulations, which will ensure the efficient and proper usage of all spaces throughout the new buildings, shall be provided.

All luminaires specified shall be fitted with light emitting diode-type lamps.

The lighting design calculations shall be based on achieving the minimum lighting levels, in accordance with the relevant South African National Standards documentation, as follows :

<input type="checkbox"/> Manufacturing / Process	- General Working Areas (*)	- 350 lux
<input type="checkbox"/> Administrative	- Entrance Halls	- 100 lux
<input type="checkbox"/>	- Reception Areas	- 100 lux
<input type="checkbox"/>	- Board rooms, offices	- 300 lux
<input type="checkbox"/>	- Computer rooms	- 500 lux
<input type="checkbox"/> Maintenance	- General	- 300 lux

The lighting design shall (where applicable) take into account and include the following, namely :

- ☐ Specified luminaires shall provide high levels of luminous flux and be fitted with electronic control gear
- ☐ Specified lamps shall provide the correct colour rendering for the application and use energy efficient lamps i.e. light emitting diode (LED) type
- ☐ Maximum natural daylight usage and controllable light levels
- ☐ Task specific light sources
- ☐ Multiple control for light circuits / zones covering areas greater than 100 m<sup>2</sup>

Emergency exit signage and route lighting shall be provided for any evacuation procedures that could occur.

Allowances shall be made for decorative post-top type luminaires, with light emitting diode type lamps, on fibreglass poles to be installed throughout the complex including along all walkways, roadways and parking areas.

The luminaires shall comply with the specification detailed in the Project Specification.

Generally, power shall be provided to the various areas by means of switched socket outlets.

The layout and quantity of the switched socket outlets shall be determined by the use of the specific room, the equipment to be installed therein and the services / activities to be rendered from there.

Switched socket outlets shall be provided approximately every 10 m<sup>2</sup> in all passages and public areas for cleaning and maintenance purposes.

Should the activity or specific equipment require, i.e. within the kitchen areas, the power supply provided shall be in the form of a switched isolator.

As the design responsibility ends at the switched socket outlet or isolator points, we cannot guarantee what the End User is going to connect to the installation. Therefore, it is only possible to encourage (and not guarantee) energy savings at switched socket outlet and isolator points.

### **E.13 Power Skirting Installation / Flush-floor or Under-screed Ducting Installation**

The power skirting, where applicable, shall be O-Line Premier Skirt PM2, a fully modular system, manufactured from self-extinguishing polycarbonate, with a white finish white in colour, complete with all necessary accessories, corner pieces, covers, dividers, elbows, end caps, joint clips, outlet clips, tee pieces, etc.

Where applicable, the flush-floor ducting and under-screed ducting systems shall be fully modular, manufactured from pre-galvanised steel (grade Z275), as manufactured by Cabstrut.

### **E.14 Cable Support Systems**

#### *Cable Ladder*

Where applicable, the cable ladder shall be manufactured from pre-galvanised steel (grade Z275), as manufactured by Cabstrut or O-Line. The cable ladder shall be of a weld-free construction, allowing fitment on site. No alternatives shall be accepted.

#### *Cable Tray*

Where applicable, the cable tray shall be manufactured from pre-galvanised steel (grade Z275), as manufactured by Cabstrut or O-Line. The cable tray shall be of an inward bend return flange construction, allowing the use of thinner gauge materials, without compromising loading or deflection standards. No alternatives shall be accepted.

#### *General*

All exposed cable support systems shall be powder coated, orange.

### **E.15 Wiring Duct Installation / Wiring Mesh Installation**

Where applicable, the wiring duct shall be manufactured from pre-galvanised steel (grade Z275), as manufactured by Cabstrut or O-Line.

Where applicable, the wiring mesh shall be manufactured from pre-galvanised steel (grade Z275), as manufactured by Cabstrut or O-Line.

All exposed wiring duct / wiring mesh shall be powder coated, orange.

### **E.16 Earthing (Bonding), Specialist Earthing, Surge Protection and Lightning Protection Systems**

#### *Earthing (Bonding) System*

The Contractor shall be responsible for the supply and installation of the required earthing (bonding) system.

#### *Specialist Earthing*

The Contractor shall be responsible for the supply and installation of the specialist earthing system.

### **E.17 Earthing (Bonding), Specialist Earthing, Surge Protection and Lightning Protection Systems**

#### *Earthing (Bonding) System*

The Contractor shall be responsible for the supply and installation of the required earthing (bonding) system.

#### *Specialist Earthing System*



The earth resistance of the respective earth bars, earth mats and earth star systems shall not exceed 30 ohms and shall be supplemented as necessary with driven molecular bonded copper clad steel rods manufactured to SANS 0163 - 1985.

Separate earth mats / systems shall be provided for the following facilities / areas, (where applicable), namely :

- ☐ Substations, Medium Voltage Switch Rooms, Transformer Rooms, Low Voltage Switch Rooms, Generator Installations
- ☐ Uninterruptible Power Supply Installations, etc.
- ☐ Telecommunications / Data Server Rooms / Data Centre Halls

#### *Surge Protection System*

The Contractor shall be responsible for the supply and installation of the required surge protection equipment.

All low voltage panels and electrical distribution boards are to be fitted with surge protection, as is required by the relevant regulations.

#### *Lightning Protection System*

The Contractor shall be responsible for the supply and installation of the required lightning protection system, protecting all buildings within the Data Centre.

The lightning protection system shall be installed in accordance with the relevant South African National Standards documentation and shall comprise (per building) :

- ☐ An air termination system installed on all parapet walls / exposed elements
- ☐ A down-conductor system installed within wall cavities, or surface mounted, whichever is necessary
- ☐ A down-conductor bonded to earth termination system
- ☐ Ground earth electrodes
- ☐ An earth termination system

### **E.18 Staff Training**

The Contractor shall provide comprehensive training of male and female operational staff and nominated maintenance personnel, to the approval of the Client / Employer. Training shall be comprehensive, covering all aspects of systems installed as part of these Works.

### **F.1 Access Control – Biometrics / Locking Devices**

The access control and locking devices system shall be installed in accordance with the relevant South African National Standards documentation and shall comprise (per lockable door)

- ☐ Installed biometric readers
- ☐ Magnetic locking or fail to safe locking devices to be installed
- ☐ Connection via relay to fire detection system in case of emergency
- ☐ Fully monitored devices for recording of entry and exit of staff member and visitors

### **F.2 Access Control – Booms / Turnstile**

The Contractor shall allow for the complete installation of all conduits, outlet boxes, plinths, booms, loops, etc., required for the access boom control system, namely :

- ☐ Install Auto-Gate red and white, powder coated full 316 stainless steel chassis booms
- ☐ Install red and white reflective barrier arms
- ☐ Ensure harmonic lifting on all operational booms
- ☐ Install presence and exiting loops for each boom
- ☐ Install control panel in the guardhouse with lock out
- ☐ Removable key lockout
- ☐ Full height 318 stainless steel Turn star Triumph 4 including pedestrian gate

### **F.3 Data Network and IP Telephone System**

The Contractor shall allow for the complete installation of all conduits, outlet boxes, data/telephone points.

The client shall provide the service provider for the data and telephone system

## **G.1 Landscaping**

ELIDZ will provide site landscaping.

## **G.2 Inclusions**

The following services, unless otherwise stated or agreed, will be provided by the landlord:

- ☐ Standby diesel generators
- ☐ UPS equipment
- ☐ Internal computer network cabling
- ☐ Computer access flooring
- ☐ Internal PABX, data and telephone networks, cabling
- ☐ Power factor correction equipment
- ☐ Electricity reticulation from the internal site electricity network to tenant's plant components
- ☐ Internal division walls within Data Centre
- ☐ Tea kitchen equipment
- ☐ Gas suppression
- ☐ Floor drains
- ☐ Bulk storage tanks – Rainwater Harvesting
- ☐ AC and ventilation plant including plant rooms to process areas
- ☐ Specific fire protection other than general industrial fire protection
- ☐ Building, operational and tenant signage
- ☐ Special security systems and access control
- ☐ Automated sliding gates

## **G.3 Exclusions**

The following services, unless otherwise stated or agreed, are not provided by the landlord:

- ☐ Computers and UPS equipment
- ☐ Special foundations for tenant's equipment
- ☐ Lockers
- ☐ Compressed air supply and equipment
- ☐ Compressor rooms
- ☐ Forklift refuelling enclosures
- ☐ Water supply, effluent control and other under floor wet services to process areas.
- ☐ Steam generation
- ☐ Furniture, fixtures and fittings
- ☐ Logistics equipment
- ☐ Dock levellers
- ☐ Protection of building and equipment from process or logistics equipment
- ☐ Specialised lifting equipment and crawler beams.