
Alton Towers Resort, Proposed Lodge Development, Services Strategy

January 2014



**Compass Energy
Consulting Engineers**

The Deanwater
Wilmslow Road
Woodford
Cheshire
SK7 1RJ

T. 01625 540101
F. 01625 549155
www.ce2.co.uk



Merlin Entertainments Group

3 Market Close
Poole
BH15 1NQ

T. 0870 4292300
F. 0870 4295500
www.merlinentertainments.biz



INDEX

SECTION 1 – Project Overview

SECTION 2 –Lodges & Tree Houses

- 2.1 Ventilation
- 2.2 Heating & Hot Water Generation
- 2.3 Electrical

SECTION 3 – Restaurant

- 3.1 Restaurant & Reception Ventilation
- 3.2 Kitchen Ventilation
- 3.3 Heating
- 3.4 Hot Water Generation
- 3.5 Electrical

SECTION 4 – Mains Services



1.0 PROJECT OVERVIEW

Merlin Attractions Operations Ltd is proposing to construct a number of Lodges for accommodation. There are 122 lodge units and 10 tree houses proposed. There is also an arrivals building which will include a kitchen, restaurant, reception and servicing facilities which is located at the entrance to the lodge site and three service huts

The purpose of this report is to highlight and explain how we are to service each lodge, tree house and restaurant

2.0 LODGES & TREE HOUSES

2.1 Ventilation

Ventilation shall be in compliance with Part F of the Building Regulations and in accordance with the guidelines of CIBSE Guide B2.

It is proposed that the windows to the lodges and tree houses will be openable to provide purge ventilation and include trickle ventilators to supply the required fresh air.

The bathroom extract fan will be sized to achieve the required air flow rates in accordance with AD'F' of the Building Regulations. The fan will be set to run in constant trickle mode 24/7 and will operate in boost mode from the bathroom lighting circuit when the bathroom light is switched on. When the bathroom light is switched off the fan will return back to trickle mode.

The constant running of the bathroom fan will ensure that fresh air will be drawn through the bedroom providing continual air change rate.

The fan will be ducted to atmosphere to terminate via the vented soffit.

2.2 Heating & Hot Water Generation

It is proposed to install a central boiler plant, CHP boiler plant and a district heating system. The central heating system would provide hot water which is circulated via the flow and return pipe work which is routed below ground around the site.

At a cluster of units pipe work branches would be routed from the main distribution network to each unit. Within each unit the flow and return pipe work will be capped off for final connection to the internal heating and DHW systems.

Hot water would be taken from the district heating circuit. Within each accommodation a small domestic heat exchange unit will be installed which will be complete with controls, storage and pumps.

As with the cold water network, each unit will have a valve arrangement located within a service trench which will be accessible from removable covers.



2.3 Electrical

Lighting;

All light fittings will contain low energy lamps such as LED or compact fluorescents.

Lighting Control;

Local switching will be provided to each room.

External Lighting

External lighting will be required to light the walk ways and routes through the site during night time periods. It is therefore proposed that lighting columns and bollards will be installed to give sufficient lighting levels for guests during this period. Lighting will be low level and details will be provided way of a planning condition requirement.

Energy Switch;

It is proposed that each accommodation shall be fitted with an energy switch operated via a room key card. On entry to the accommodation the key card will need to be inserted into the top of the switch to allow the lighting to be operated. On removal of the key card the lighting circuits will be isolated after a 10 second period. This will ensure that all lighting is switched off whilst the rooms are unoccupied.

The small power circuits will remain live at all times to allow occupants to charge mobile phones and lap tops etc. whilst out of the accommodation.

2.3.1 Fire Detection

Each unit would require an individual multi sensor complete with xenon beacon and sounder.

To ensure that the operators are aware of a fire alarm activation each unit will be linked to a central panel located within the restaurant block. Further notification could be provided by linking the FAP in to the telephone/data system to alert the sites manager centre or night porter of a fire alarm activation.

3.0 RESTAURANT

3.1 Restaurant & Reception Ventilation

The restaurant and reception areas shall be ventilated by means of heat exchange units sized to provide a minimum air flow as detailed in Part F of the Building Regulations and guidelines as set out in CIBSE Guide B2. The heat exchange units will be linked with the fan coil units and controlled automatically with an element of manual control allowed for. The manual control is to allow the management to adjust the systems to meet the fluctuating levels of occupancy and minor changes in external conditions which may affect the internal conditions. However the manual control element will be restricted to



ensure that the systems operate within their requirements and ensure that energy efficiencies are maintained.

The heat exchange units will be the source of the ventilation requirements and shall be sized to ensure that the air flow rates within the areas are set to achieve Building Regulation requirements.

The fan coil units are to be a VRF (Variable Refrigerant Flow) system which transfers heat from one unit to another instead of 'dumping' to atmosphere as wasted energy making this type of system extremely energy efficient. This part of the system is discussed below.

All other areas shall be ventilated to comply with the requirements of Building Regulations and CIBSE Guidance.

3.2 Kitchen Ventilation

Kitchen ventilation shall be in compliance with HVAC document DW/172 and TR/19 and the DEFRA guidance for kitchen extract systems.

The kitchen extract system will be routed to roof level where the system shall terminate. The extract fan is to be located on the roof and will be sized to achieve the required flow rates of the kitchen and the resistances of the canopy, duct work and ancillary equipment. Where the extract system penetrates the compartmentation of the kitchen the duct will either be fire rated or enclosed within a fire rated enclosure up through the building.

The kitchen intake air shall be ducted from an external location in to the kitchen. Depending on the type of canopy proposed the fresh air shall be ducted to either the canopy or distributed through a number of ceiling grills within the kitchen. The supply air system will be complete with filter media and fire damper shutters where penetrating fire barriers such as walls, floor slabs etc.

Where deemed required by the acoustic report the extract system will be complete with attenuation which shall be manufactured for kitchen exhaust systems.

At the required stage a DEFRA risk assessment for odour control will be produced and submitted to the EHO for consideration.

Once the scheme has been presented to the EHO we will discuss their concerns and take the appropriate actions to ensure that the officers are satisfied with the system proposed to gain approval and subsequent sign off of the system.

3.3 Heating

Heating to the reception and restaurant shall be provided by a VRF system complete with air source heat pumps. This type of system is accepted as a renewable technology.

The system will be linked in to the ventilation system as detailed above.



The fan coil units will temper the air as required by each area through thermostats located to give the best actual room temperature. The systems will be controlled as groups with each group being within an assigned area.

Each system will be individually controlled as a group via local controls. The controls will be pre-set with only minimal control allowed by staff for minor adjustments to the system.

The design and control strategy will provide the best achievable efficiencies.

3.4 Hot Water Generation

Hot water will be generated via a high efficient gas fired condensing water heater. The water heater will be located within the plant room and provide hot water to all points of use including the kitchen. The hot water pipe work shall be insulated throughout its entirety in accordance with British Standards and Building Regulations to ensure that the systems heat losses are kept to an absolute minimum.

3.5 Electrical

Lighting;

All light fittings will contain low energy lamps such as LED or compact fluorescents.

Lighting Control;

Local switching will be provided to each room and area. Lighting within some of the areas such as the restaurant may be on numerous circuits to provide different lighting effects and scenes. Under these requirements grid switching or lighting control will be provided.

In back of house areas and public w/c's the lighting shall be controlled via PIR/microwave presence detection.

3.5.1 Fire Detection

The fire alarm system shall consist of an addressable type system comprising the following:

- i) Addressable Control Panel (Semi-recessed at 1.7m.f.f.f.l).
- ii) Optical Multi-detector Smoke/heat Detectors/Sounder
- iii) Fast Response Heat Detectors
- iv) Manual Call Points Flush Mounting
- v) Loop Isolators
- vi) Xenon Beacons
- vii) Optical Smoke Detector
- viii) Interface Units



4.0 MAINS SERVICES

3.1 General

It is proposed to distribute the services to each accommodation from a central point. All incoming mains services will be terminated at meters located within the proposed service area plant room. From this point each service will be distributed via a local network to each accommodation.

It is proposed to distribute the services via an underground network from the central plant/service location. At predetermined locations around the site access chambers will be required, housing items of equipment such as valves, joining points and localised plant/equipment required to ensure that the systems can be maintained and serviced and each accommodation can be individually isolated as required.

3.2 Electricity

Electricity will be provided to the site from the main sites HV electrical network. A substation will be sited on the site adjacent the proposed restaurant where an LV ring main will be installed to service each accommodation. Within each accommodation a suitable sized consumer unit will be installed with the required isolation.

3.3 Gas

Gas will be extended from the existing gas infrastructure on the main site. The gas meter will be located within the service area and feed the central boiler plant and the kitchen/restaurant gas fired equipment.

3.4 Water

Water will be extended from the existing water infrastructure on the main site. The water meter will be located within the service area. Within the service area a distribution system will be installed which will be routed around the site. Each accommodation will be provided with mains isolation and in accordance with WRAS.