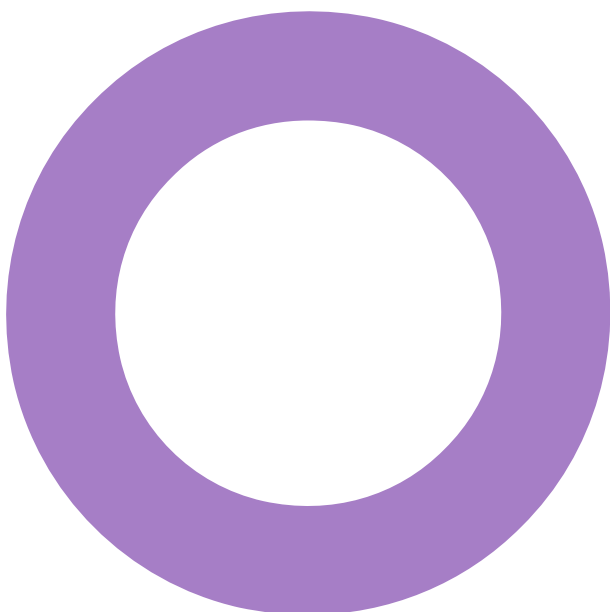


**Proposed Great Wolf Lodge.  
Chesterton, Bicester,  
Oxfordshire.**  
**Great Lakes UK Ltd.**

VENTILATION / EXTRACTION STATEMENT  
NOVEMBER 2019



## Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	09/10/2019	Preliminary issue for comment	TK	MM	AP
01	23/10/2019	Design team feedback incorporated	TK	MM	AP
02	04/11/2019	Design team feedback incorporated	TK	MM	AP

This document has been prepared for Great Lakes UK Limited only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law. The consequences of climate change and the effects of future changes in climatic conditions cannot be accurately predicted. This report has been based solely on the specific design assumptions and criteria stated herein.

Project number: 3103019

Document reference: REP-3103118-08-TK-20190828-Ventilation Extraction Statement-Rev 02.docx

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## 1. Executive Summary

This design note has been prepared to summarise the grease, smoke, odour and noise control mitigation measures associated with cooking activities present within the various catering facilities within the Proposed Great Wolf Lodge Development.

In addition to informing design development going forward, it is intended that this statement is provided to any potential franchise catering establishment's respective design teams, to inform their kitchen design development.

Suitable kitchen supply and extract ventilation systems will be provided to serve the proposed catering facilities.

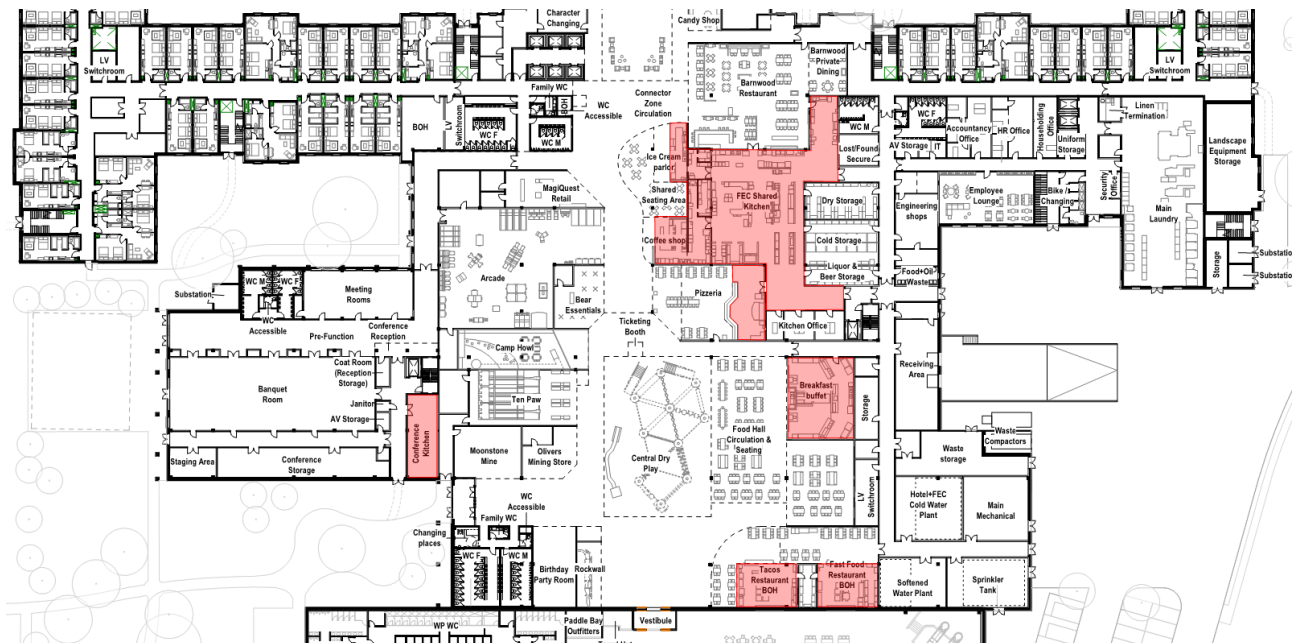
All kitchen ventilation systems will be designed and installed in accordance with the guidance set out in BESA publication 'DW/172: Specification for Kitchen Ventilation Systems (DW/172).

All control measures will in general follow the guidance within Defra publication 'Guidance on the Control of Odour and Noise from Commercial Kitchen Exhaust Systems'.

A summary of the catering facilities proposed to be incorporated within the development is provided below:

- Ice Cream Parlour
- Coffee Shop
- Breakfast Buffet
- Pizzeria
- Fast Food Restaurant
- Tacos Restaurant
- Barnwood Restaurant
- Conference Suite

The associated kitchen facilities will be located within the following approximate areas (highlighted in red) within the Family Entertainment Centre:



At this early stage of design development, the nature of cooking to be conducted in each of the establishments, and the type of catering appliances that will be present, is subject to agreement and design development. Therefore, in line with best practice, it is assumed that a high level of odour, smoke, grease and noise control will be provided.

Emissions from catering facilities are to be controlled via dedicated kitchen supply and extract ventilation systems, via a combination of canopy, duct, and roof mounted capture and filtration technologies, as appropriate to suit the developed kitchen design and appliances, and to ensure that the emissions are not considered a nuisance by nearby receptors.

The roof of the Family Entertainment Centre (FEC) will accommodate the majority of supply and extract ventilation plant associated with the FEC, including kitchen extract plant.

As the closest odour sensitive receptors will be present within the development itself (e.g. fresh air intake cowls associated with roof mounted supply air handling units), all ventilation systems will be designed in a manner to mitigate against the risk of exhaust odours being recirculated back into the development. The scope of grease, smoke and odour control measures incorporated into each kitchen extract system will be reflective of the measures required, based on the type and duty of kitchen appliances present within the respective kitchens. Fresh air intake and exhaust air termination positions will be diligently selected to mitigate against the risk of recirculation of odour from exhaust to fresh air intake. The direction of the prevailing wind will be taken into account when siting fresh air intake and exhaust terminals.

## 2. Grease, Smoke, Odour and Noise Control Measures

Measures are to be taken to remove grease as close to the source as possible, by incorporating appropriate technology into the extract canopies above the installed cooking appliances. Grease separators will be considered for all extract canopies, to act as the initial stage of filtration for extract airstreams, safely collecting and depositing grease to limit what is carried into the plenums and ductwork systems.

In addition, consideration will be given to incorporating ultraviolet (UV) light technology into extract canopies to further enhance grease removal from the extracted airstreams prior to connection to header ductwork infrastructure.

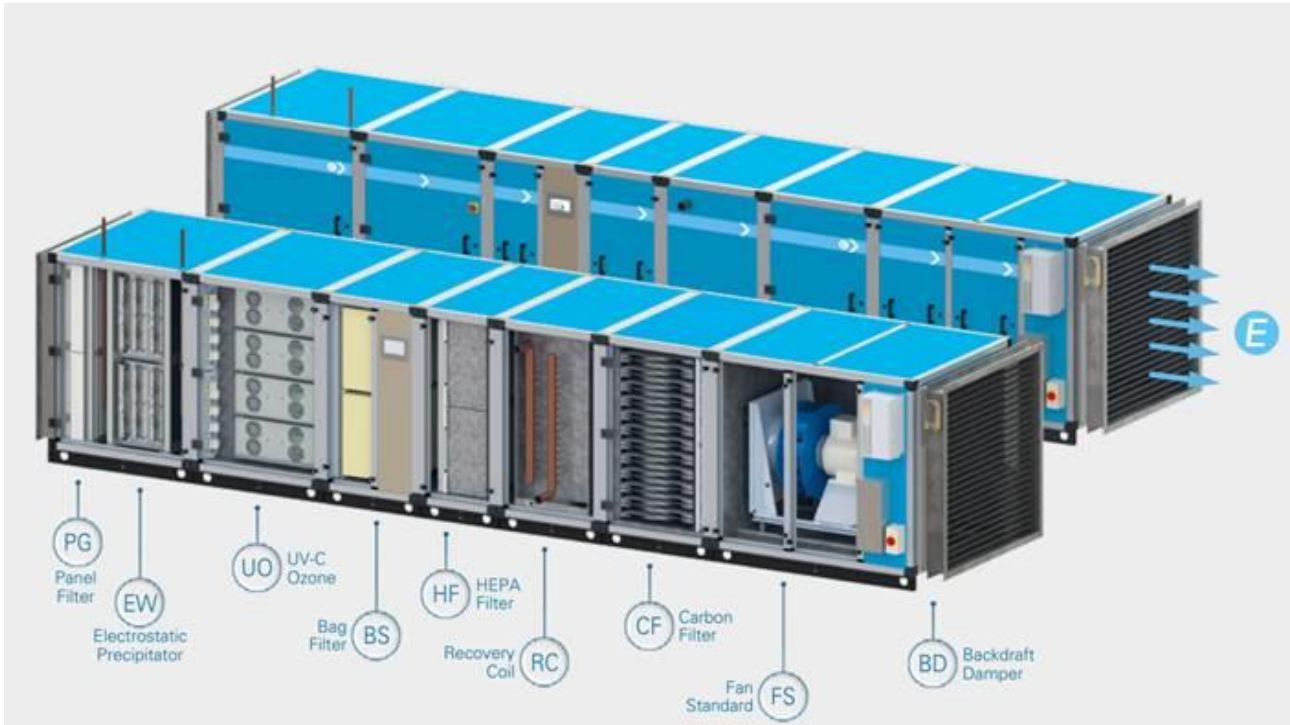
Should any solid fuel appliances be proposed, consideration will be given to the use of water wash and/or water mist systems. These systems will also be considered where appropriate to further enhance grease removal from the extracted airstreams, for example where very high levels of grease are expected from cooking activities.

From each extract canopy, kitchen extract ductwork will generally be routed via internal voids and risers to roof level, at which point it will connect to packaged or component extract air handling units. Suitable cleaning access will be provided through access doors and hatches in strategic locations along the route of the ductwork, in accordance with the recommendations of BESA publications DW/172 and TR/19.

Prior to connection to air handling equipment, in-duct filtration via electrostatic precipitators (ESPs) will be considered. This would act to further reduce the size of grease and smoke particulate matter to a level invisible to the naked eye and to limit deposits within the ductwork system and prolong the life of the final stage filters.

Following any in-canopy and in-duct filtration, kitchen extract ductwork will connect to extract air handling units, comprising appropriate component sections to filter the airstreams prior to exhausting to atmosphere. Each air handling unit will typically incorporate a G4 panel filter and F9 bag filter, with E11 HEPA filters and carbon filters provided where appropriate. Filtration will act to eliminate odours, reduce any smoke to below levels visible to the naked eye and absorb any surplus ozone resulting from the implementation of UV light technology.

The image below provides an example of a typical extract air handling unit, and identifies the grease, smoke and odour control measures referenced above:



High velocity discharge cowls may be considered as a potential alternative to filter-based odour removal. Discharge cowls will only be provided where it can be established that cowls can be sited in suitable locations to avoid smoke, odour or noise issues.

Vitiated air will be discharged to atmosphere via suitable duct-mounted attenuators, sized to ensure the air handling equipment and associated systems do not exceed the permitted background noise levels. Noise attenuation will be enhanced by directing exhaust airstreams away from noise sensitive receptors wherever feasible. In addition, packaged air handling equipment will be manufactured using acoustically rated casing components to limit case radiated noise to within the permitted external limits.



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