

External Design Conditions

1.0 Introduction

1.1 Role & purpose of this document

The purpose of this supplementary document is to set out the external design conditions for Highland Councils M&E Systems.

The Highland region's climate varies considerably to that of the rest of Britain and it is for that reason that the Highland Council has created its own design conditions document detailing the external design parameters which all M&E systems will be designed to meet, depending on project location.

1.2 Related documents

This design conditions document should be used along with the other regulation publications governing M&E design –

- British Standards
- Building (Scotland) Regulations
- CIBSE Guides
- BREEAM
- IEE Wiring Regulations (BS 7671)

The requirements set out in this document may require systems to be designed over and above these standards, guides and regulations.

2.0 General Principles

2.1 Who do these conditions apply to?

All Highland Councils sub-contracted design consultants must design the M&E services to operate within these parameters.

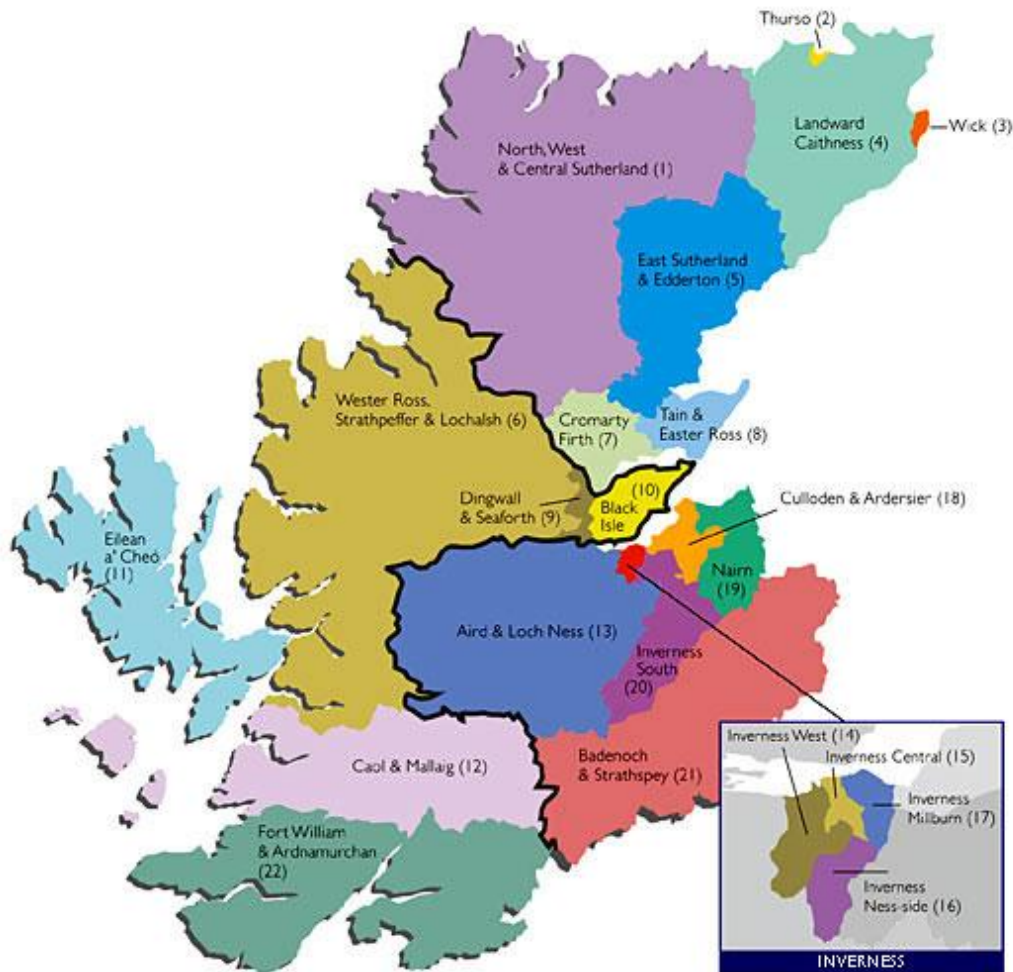
2.2 What do these standards apply to?

These conditions apply to all M&E systems throughout the whole of the Highland Council's building stock.

3.0 Strategy

In order to design systems which perform effectively and efficiently during both the warm summer months and extreme cold winter months, which have been experienced in recent years, this document details the climate throughout the highlands ensuring systems are designed to suit the location. The Highland region is broken up into five zones, in order to provide accurate area specific design conditions to optimise the performance of the systems.

Several towns from each regional zone have been selected to show detailed design conditions; the town nearest the project location should be used to determine the climate and design parameters. However, design consultants should confirm with the Energy & sustainability Team which town's design data they are utilising for a project before commencing with the design.



3.1 Zone 1

The following wards are included within zone 1 –

- Thurso
- Wick
- Landward Caithness
- Sutherland & Edderton
- Cromarty Firth
- Tain and Easter Ross

This zone experiences relatively dry and warm summers with cold, snowy winters. Generally wind speeds are high with high levels of sunshine during summer months.

The towns and villages detailed within zone 1 are Dornoch, Kinlochbervie, Thurso and Wick.

3.2 Zone 2

The following wards are included within zone 2 –

- North, West & Central Sutherland
- Wester Ross, Strathpeffer & Lochalsh

This zone experiences relatively wet but warm summers with cold, wet and snowy winters, high wind speeds and low levels of sunshine.

The towns and villages detailed within zone 2 are Durness, Gairloch, Kyle of Lochalsh and Ullapool.

3.3 Zone 3

The following wards are included within zone 3 –

- Eilean a cheo
- Caol & Mallaig
- Fort William & Ardnamurchan

Zone 3 experiences relatively warm and wet climate with average to low snow fall during winter and average levels of sunshine during summer. High winds speeds are a characteristic of zone 3 with winds peaking on the coast around Mallaig.

The towns and villages detailed within zone 3 are Fort William, Mallaig, Portree and Tobermory.

3.4 Zone 4

The following wards are included within zone 4 –

- Dingwall & Seaforth
- Black Isle
- Aird & Loch Ness
- Inverness West
- Inverness Central
- Inverness Millburn
- Inverness Ness-side

With a relatively warm and dry climate zone 4 experiences low to average levels of snow fall in winter and relatively high levels of sunshine in summer. Wind speeds across this zone are low to average with highest speeds recorded around Inverness.

The towns and villages detailed within zone 4 are Dingwall, Fort Augustus, Inverness and Tomich.

3.5 Zone 5

The following wards are included within zone 5 –

- Inverness South
- Culloden & Ardeseir
- Nairn
- Badenoch & Strathspey

High levels of snow and frost with very low winter temperatures makes zone 5 a very cold region of the highlands. Sunshine levels are low to average during summer although annual rainfall is also low to average. Wind speeds vary across this zone with low wind speeds inland and high wind speeds at the coast (Nairn).

The towns and villages detailed within zone 5 are Aviemore, Dalwhinnie, Grantown-on-spey and Nairn.

4.0 Design Conditions

Below is a list of external design temperatures in various towns and villages across the Highlands. The consultant who carries out each design project must identify the nearest town or village to the project location, confirm this with the Energy & Sustainability team and design the M&E systems to meet the external design temperature.

Town	Latitude	Longitude	Altitude (m)	External Design Temp (deg C)
Dornoch	57.88°N	- 4.03°W	10.6	-5
Kinlochbervie	58.46°N	- 5.05°W	8.2	-5
Thurso	58.59°N	- 3.59°W	17.6	-5
Wick	58.44°N	- 3.09°W	10.6	-5
Durness	58.57°N	- 4.75°W	43.5	-5
Gairloch	57.72°N	- 5.68°W	17.4	-5
Kyle of Lohcalsh	57.28°N	- 5.72°W	20.3	-5
Ullapool	57.99°N	- 5.16°W	17.1	-5
Fort William	56.82°N	- 5.10°W	8.2	-10
Mallaig	57.00°N	- 5.83°W	13.4	-5
Portree	57.41°N	- 6.19°W	20.4	-5
Tobermory	56.62°N	- 6.07°W	42.9	-5
Dingwall	57.59°N	- 4.43°W	6.2	-5
Fort Augustus	57.14°N	- 4.68°W	32.6	-5
Inverness	57.47°N	- 4.23°W	6.0	-5
Tomich	57.30°N	- 4.81°W	114.4	-5
Aviemore	57.19°N	- 3.82°W	217.1	-15
Dalwhinnie	56.94°N	- 4.24°W	351.9	-10
Grantown-on-spey	57.33°N	- 3.61°W	220.0	-10
Nairn	57.58°N	- 3.88°W	18.7	-5