Executive Summary

This executive summary provides an overview analysis of the greenhouse gas (GHG) emissions associated with Lupin Healthcare (UK) Limited's Luforbec 100/6mcg & 200/6mcg pressurised metered dose inhalers (pMDI). This 'Cradle to Grave' assessment follows the principals outlined by the Greenhouse Gas Protocol and ISO 14067:2018, and focuses on the embodied GHG emissions of raw materials, the transport of these materials, the manufacture/processing, distribution, the use of the inhaler and disposal of each product.

Lupin's Luforbec inhalers are used to distribute Active Pharmaceutical Ingredients (APIs) through an aerosol propellant. The API's within Luforbec are beclomethasone dipropionate and formoterol fumarate. Within this assessment, both strengths variations of Luforbec, 100/6mcg & 200/6mcg, have been included.

Lupin has two production facilites licenced for the manfuacture of Luforbec. Initally, both strengths of Luforbec were planned to be manufacured at Coral Spring in the USA. However, Lupin plans the transfer of all manufacturing to its facility in Indore (India). For this reason, the LCA study includes the emissions arising from production in Indore, as well as modelled emissions for the production in the USA. In both scenarios, the products are then transported to the UK. The packaging materials are predominantly sourced from India, with the API's sourced from Italy and Spain. All emissions arising from production include products manufactured in India and the USA.

The breakdown of life cycle carbon emissions for each Luforbec variation, manufactured in each location, is shown in the following table:

Process	Emissions per one Luforbec 100/6mcg pMDI (gCO_2e)		Emissions per one Luforbec 200/6mcg pMDI (gCO_2e)	
	Indore, India	Coral Springs, USA	Indore, India	Coral Springs, USA
Raw materials – embodied	263.45	263.45	326.01	326.01
Raw materials transport	103.31	603.23	103.31	603.29
Manufacture	421.46	234.06	421.46	234.06
Product distribution	9.64	429.55	10.05	447.68
Usage	7,852.38	7,852.38	10,116.34	10,116.34
Disposal	2,765.69	2,765.69	3,326.30	3,326.30
Total gCO_2e	**11,415.92**	**12,148.41**	**14,303.46**	**15,053.67**
gCO_2e per actuation	**95.13**	**101.24**	**119.20**	**125.45**

The majority of emissions associated with these products arises from their use and disposal phases, due to the propellant's global warming potential when released into the atmosphere. Luforbec manufactured in the USA has a higher carbon footprint than that manufactured in India. This is predominantly because the raw materials travel a greater distance to the factory in Coral Springs, which are then flown to the UK as the finished product. In comparison, the finished product at Indore is transported to the UK by ship, a much less carbon intensive transport method.

Carbon Footprint Ltd, has assessed the **Cradle to Grave** carbon emissions associated with the Luforbec inhalers (100/6mcg and 200/6mcg doses). By achieving this, Luforbec 100/6 and 200/6 pMDIs have qualified to use the Carbon Footprint Standard as CO_2e assessed products.