ENVIRONMENTAL STATEMENT – VOLUME 3 – APPENDIX 15.1

Baseline GHG Emissions Calculation

Drax Bioenergy with Carbon Capture and Storage

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations, 2009 – Regulation (5(2)(a))

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TABLE OF CONTENTS

TABLES

1. BASELINE GHG EMISSION CALCULATION

1.1. BASELINE GHG EMISSIONS CALCULATION

1.1.1. **Table 1.1** presents the full activity and emission factors data used for the baseline GHG Emissions calculation.

Table 1.1 – Baseline Scenario GHG Emissions

Data Type	Value	Unit	Source
Total electricity generated (net)	1,282	MW	Aligned with BEIS Annex C submission
Total electricity generated (net)	5,126,400,000	kWh	Calculation: Total electricity generated (net)*1000*4000 hours
Boiler efficiency (net)	39.7	%	Net efficiency based on BEIS Annex C submission. Net Efficiency includes unit works power, station works power, CCS works power and process steam power loss.
Total energy in wood	12,912,846,348	kWh	Calculation: ((Total electricity generated*100) / (boiler efficiency))
Calorific value of wood (net cv)	17,600	KJ / kg	Drax Power Ltd Financial Model
Calorific value of wood (net cv)	4.89	kWh / kg	Calculation: 17600/3600
Total wood used	2,641,264,026	Kg	Calculation: (Total energy in wood / calorific value of wood)
Wood Emissions Factor	1.675	tCO_2e / t	Specific emission factor for the Drax Combustion Process

Data Type	Value	Unit	Source
Total Combustion Emissions	4,425,373,199	$kgCO_2e$	Calculation: (Total wood used * Wood Emissions Factor)
Total Combustion Emissions	4,425,373	tCO_2e	Calculation: (Total Combustion Emissions/1000)
Supply chain GHG Emissions rate	109	$KgCO_2e$ / MWh	https://www.drax.com/sustainability/sustainable-bioenergy/sourcing-sustainable-biomass/
Baseline Supply chain GHG Emissions – D	558,778	tCO_2e	Calculation: (total baseline electricity generated (net,kWh) * supply chain Emissions rate) / 10^6 (Drax, 2020)
Land use, land use change and forestry (LULUCF)	-10,863	tC stored	Calculation: (habitat type and area)
Total Baseline GHG Emissions	547,915	tCO_2e	Total baseline Emissions equal the total supply chain Emissions arising from the production and sourcing of biomass and carbon stored by organic matter (i.e. vegetation and soils of different habitats) at Drax Power Station.