

# ULTIMATE



WATER SMART INDUSTRIAL SYMBIOSIS

## CS7 – Tain (Glenmorangie distillery)



Meeting: October, 30th 2020





# CS7







# Sustainability strategy

- Wastewater treatment for discharge in the Dornoch Firth
- Biogas production for energy recovery as heat
- Nutrient rich sludge used as a soil enhancer in local Barley fields

## Glenmorangie's Waste Water Treatment



- Dornoch Environmental Enhancement Project: restore Native European oysters and enhance biodiversity in the Dornoch Firth

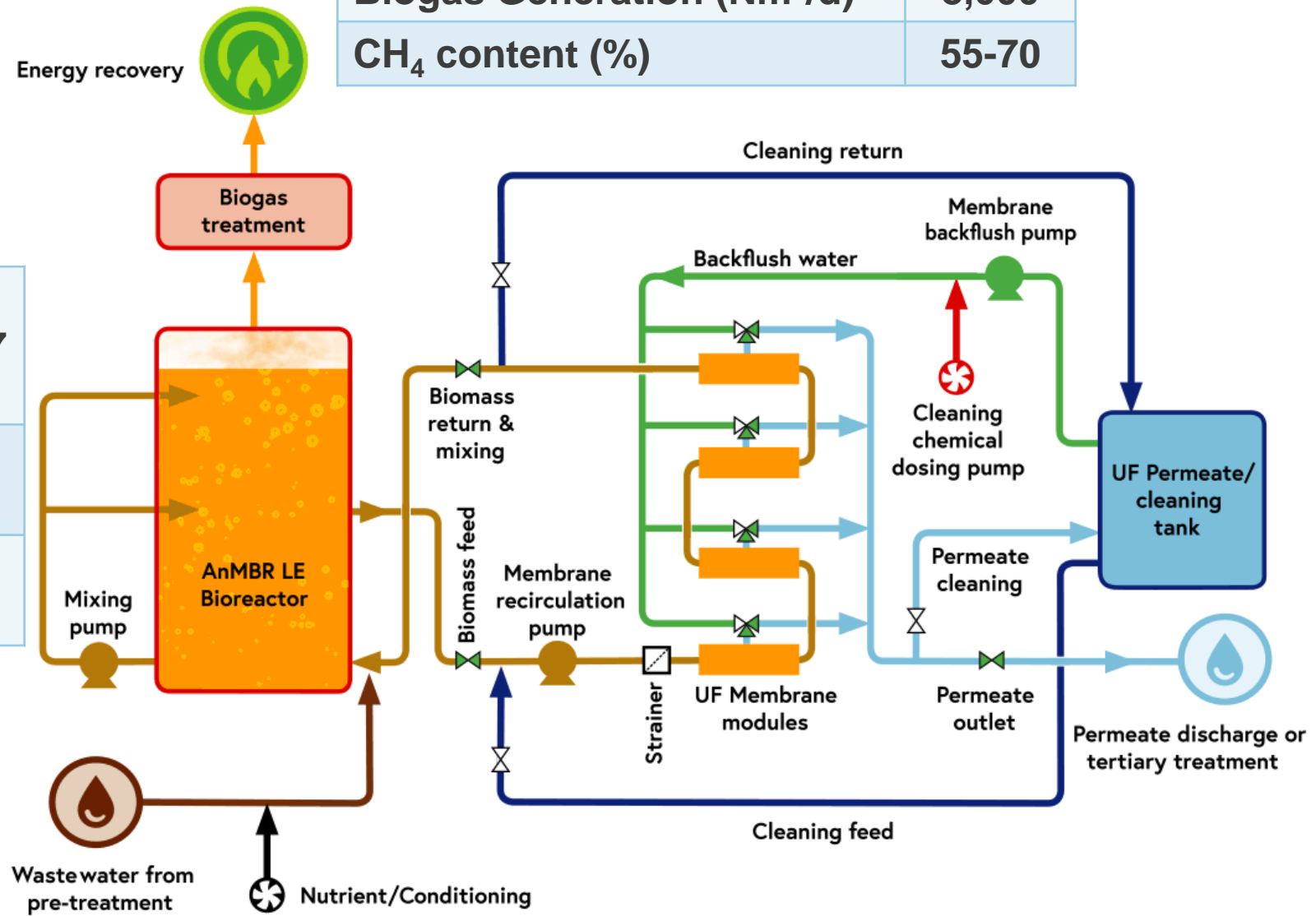


# AnMBR LE™



Biogas Generation (Nm <sup>3</sup> /d)	8,000
CH <sub>4</sub> content (%)	55-70

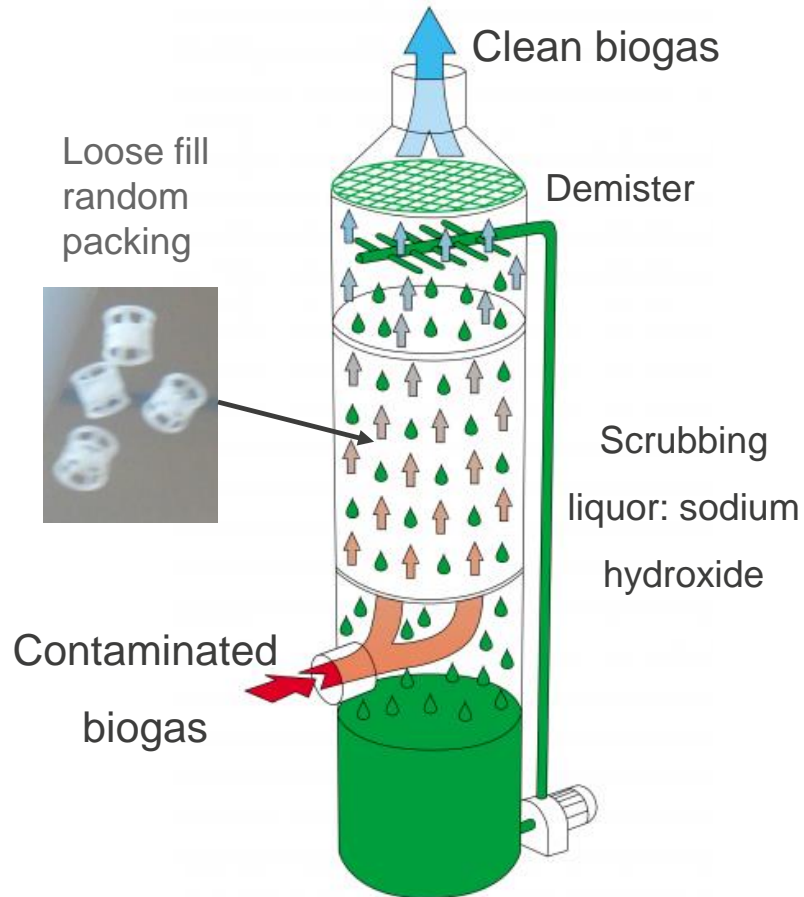
Peak/average AnMBR Feed flow rate (m <sup>3</sup> /d)	467/377
Design COD load (kg/d)	14,527
Average total COD removal	> 95%





# Biogas scrubber and boiler

Packed tower scrubber for H<sub>2</sub>S removal



Biogas fired steam boiler



<b>Maximum continuous rating (kg/hr)</b>	<b>2067</b>
<b>Design temperature (°C)</b>	<b>188</b>
<b>Working pressure</b>	<b>8 barg</b>

<https://www.forbesgroup.co.uk/environmental-technologies/packed-tower/>







# Current system

Reduces the dependence in fossil fuel  
of the distillery by 15%



Low-cost energy for heating



Ww

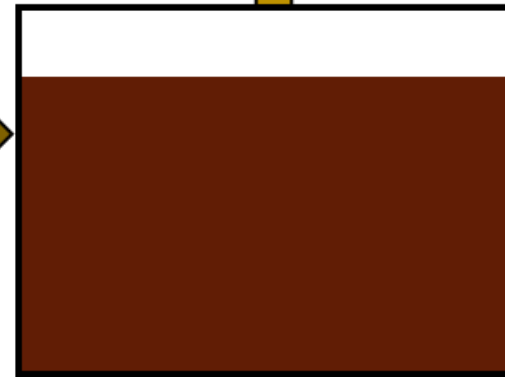
Boiler

Biogas



Effluent

Dornoch Firth



AnMBR

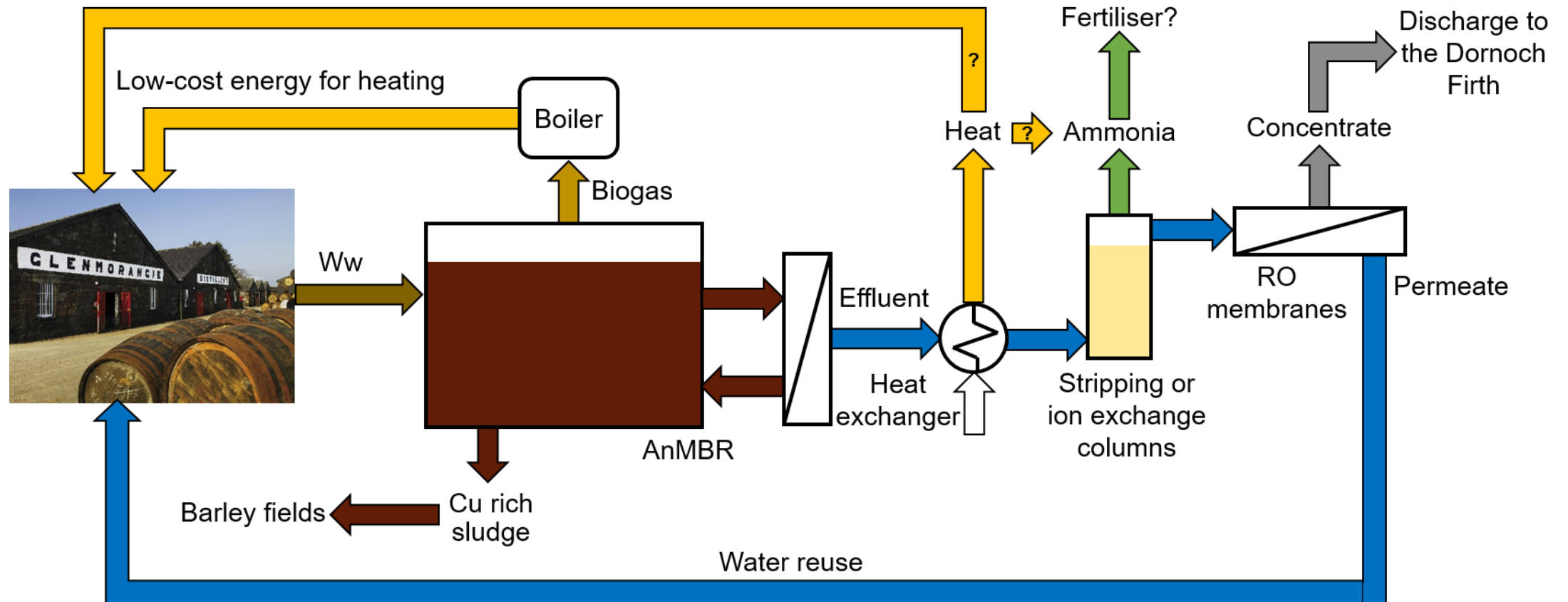
Barley fields

Cu rich  
sludge





# As part of Ultimate...



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## Thank you!