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Laggan & Tormore Gas Plant:
18 Months of Operation
Results of a New Produced
Water Treatment

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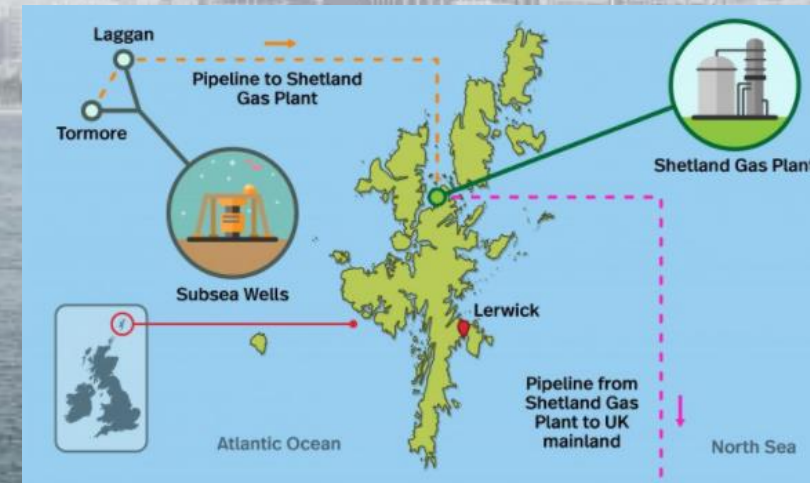
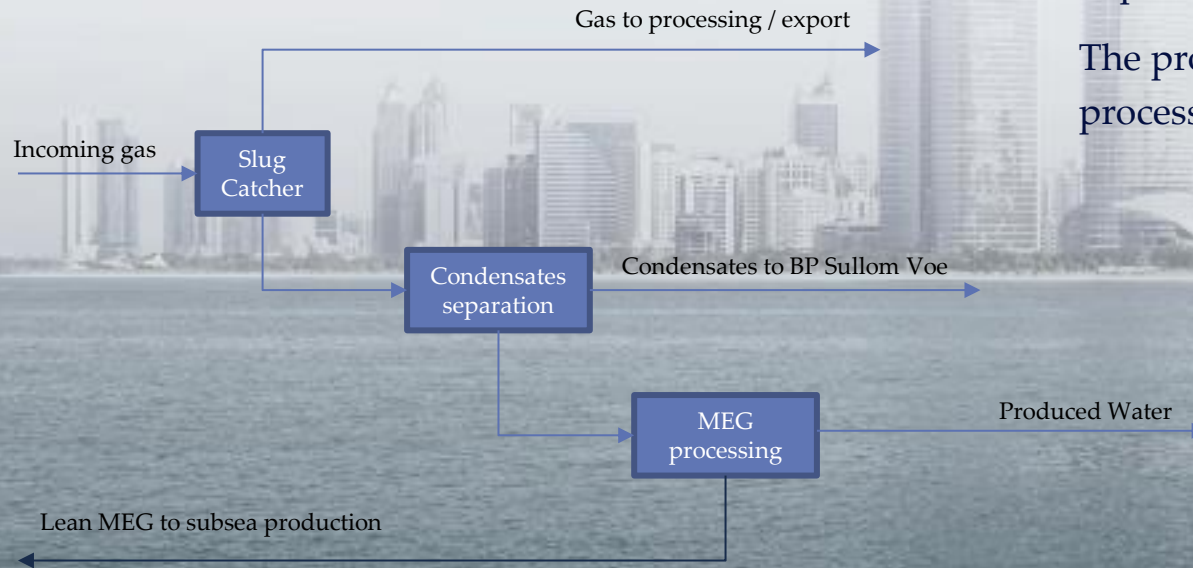
AGENDA

- Background
- Process Overview
- Operating results
- Conclusions

Laggan & Tormore – Shetland Gas Plant (UK)

The Shetland Gas Plant (SGP) is a 500 MMSCFD capacity gas plant located at Sullom Voe. It receives reservoir fluids, via twin 143km multiphase flow lines, directly from the Laggan-Tormore fields which are located 125km north-west of the Shetland Islands (North Sea) in approximately 600m water depth.

The produced water is fed to the Effluent Water Treatment Plant (EWTP) for processing prior to being discharged to Yell Sound via a 3.75km pipeline.

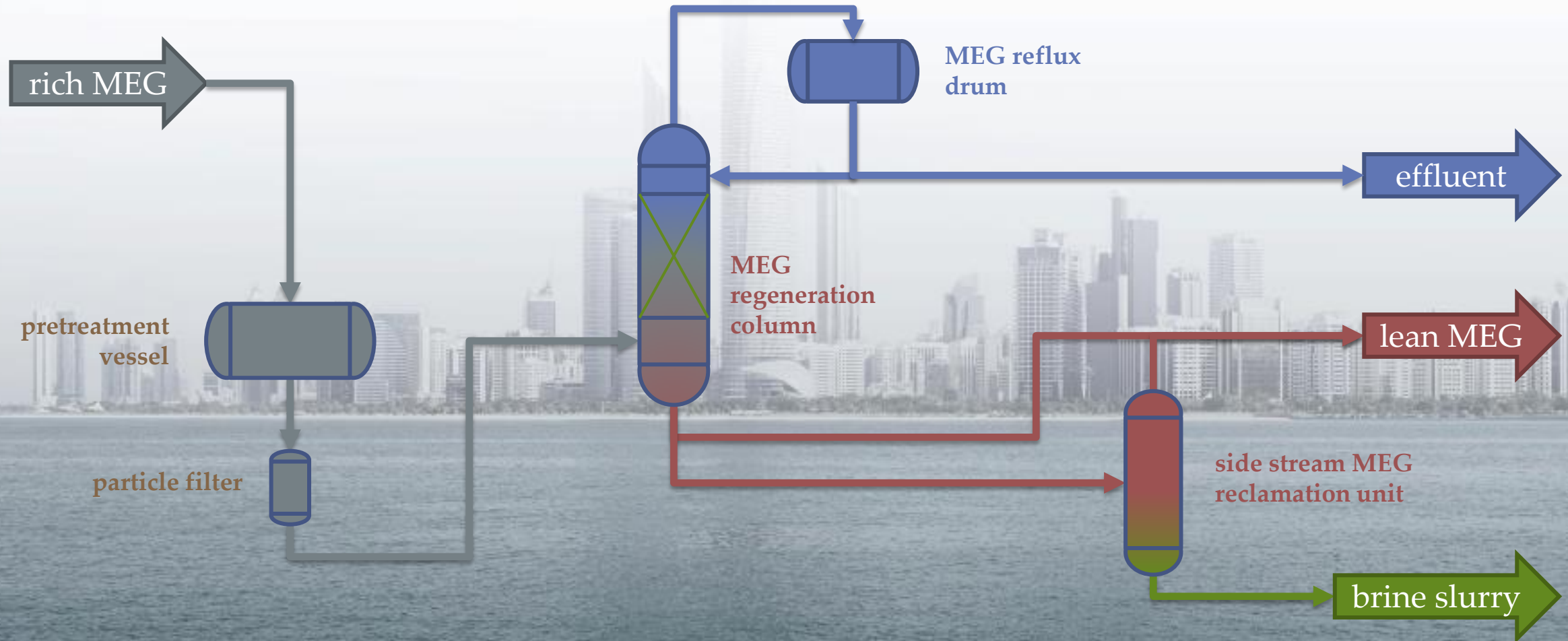


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SGP MEG regeneration effluent source



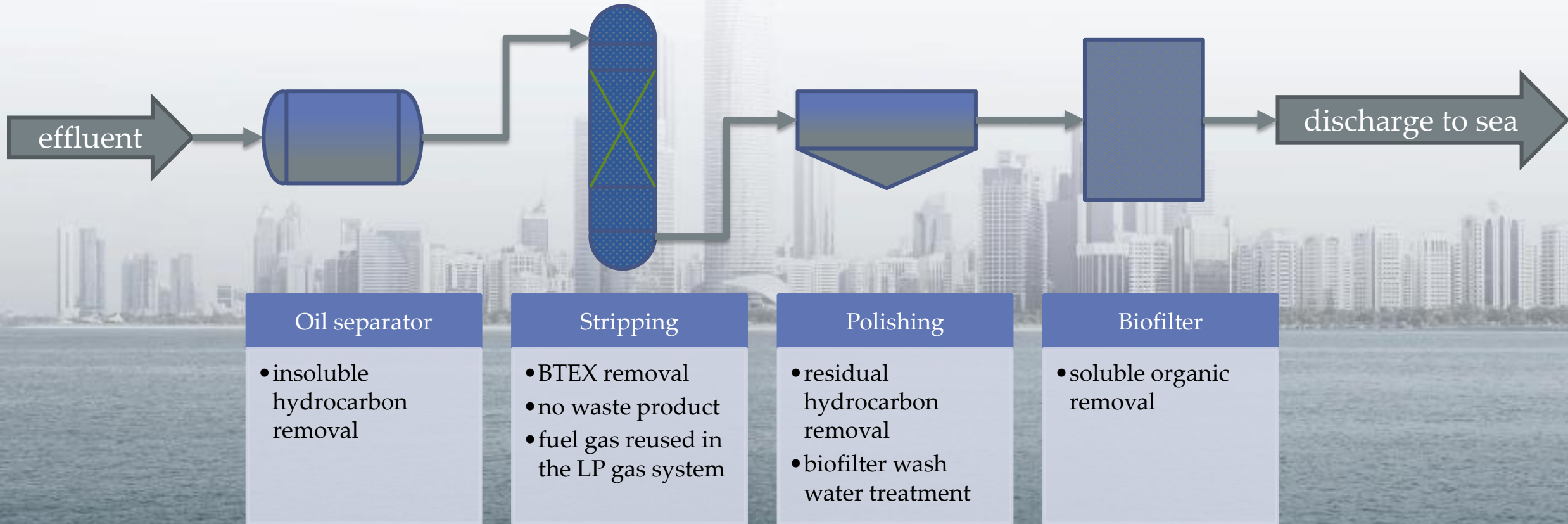
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SGP EWTP

Pegasus process

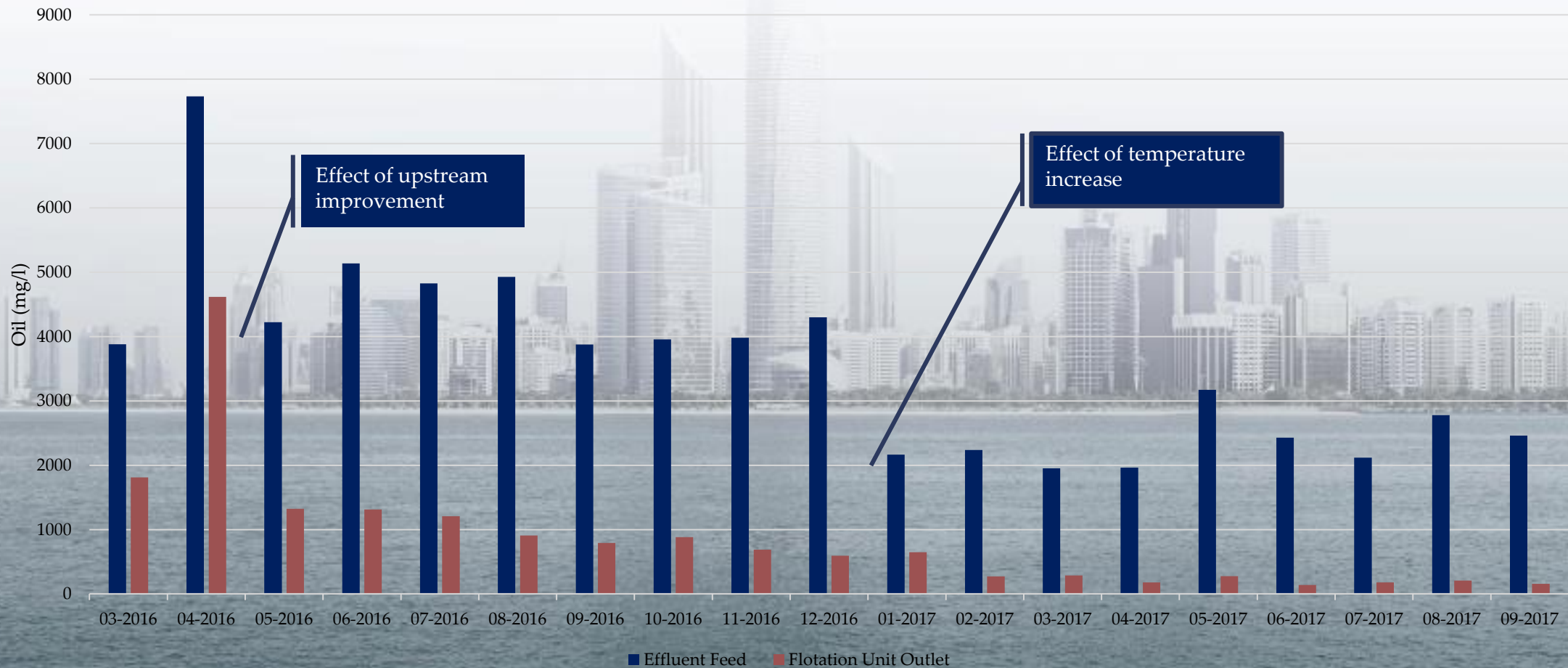


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SGP EWTP – Deoiling since start up

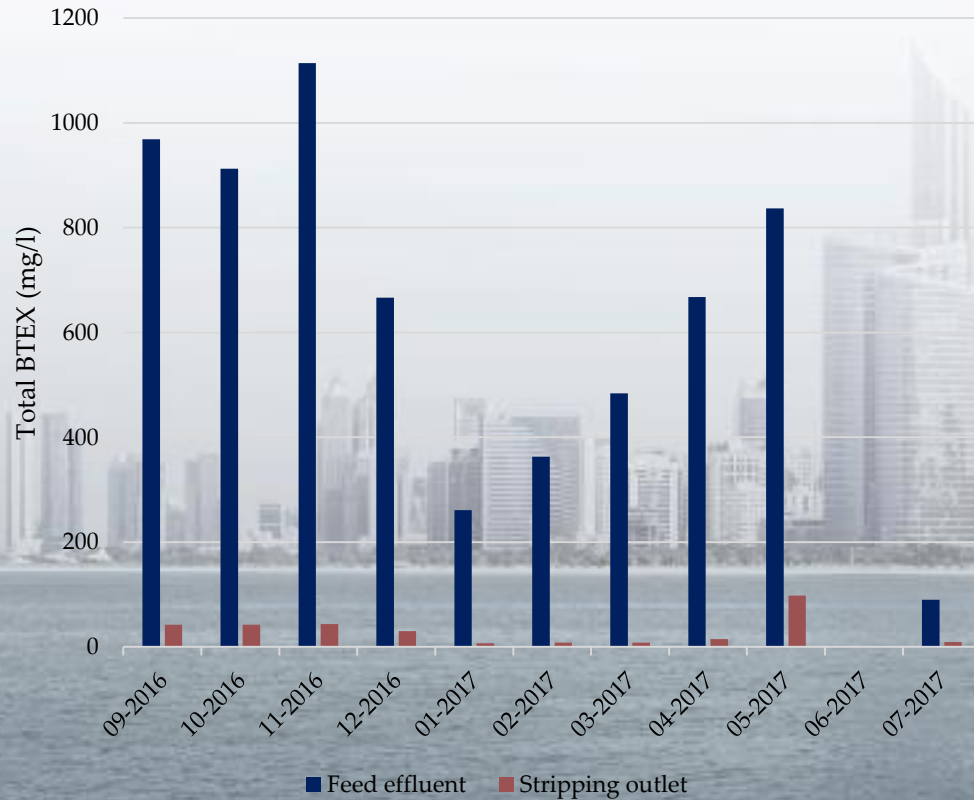


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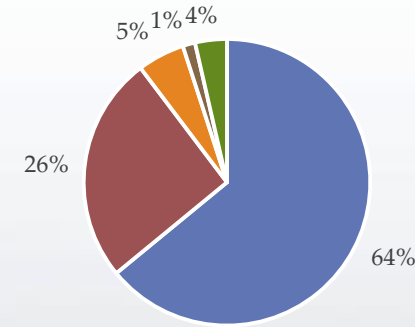


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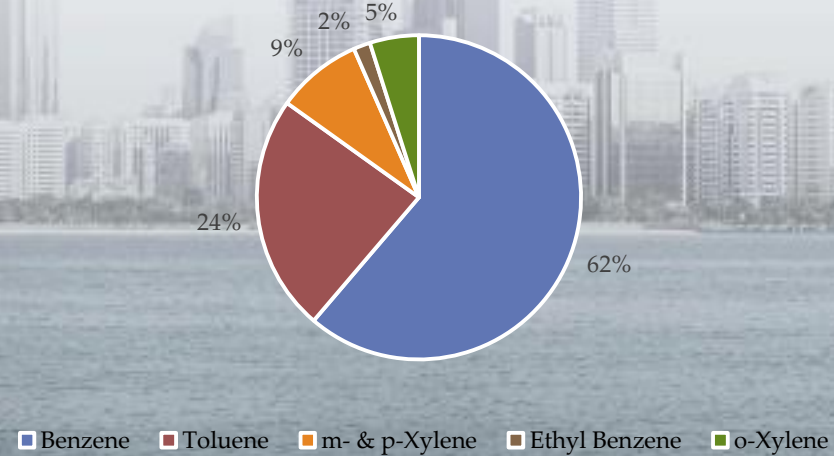
SGP EWTP – physical BTEX removal



Feed BTEX composition



Stripped effluent BTEX composition



No significant change in proportions of individual components

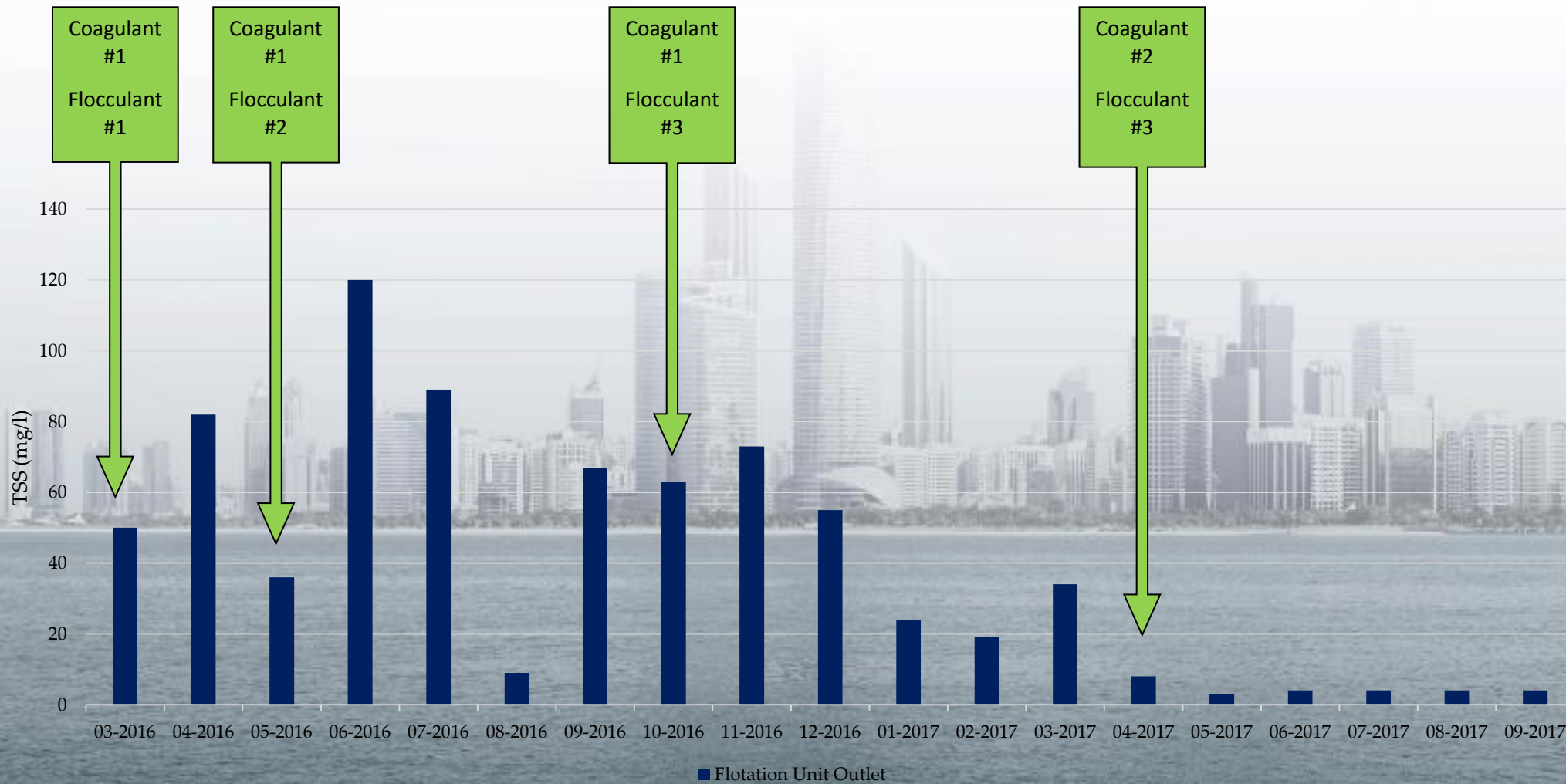
Stripping equally effective for removing different BTEX components

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SGP EWTP – Optimizing chemical dosing to improve TSS removal

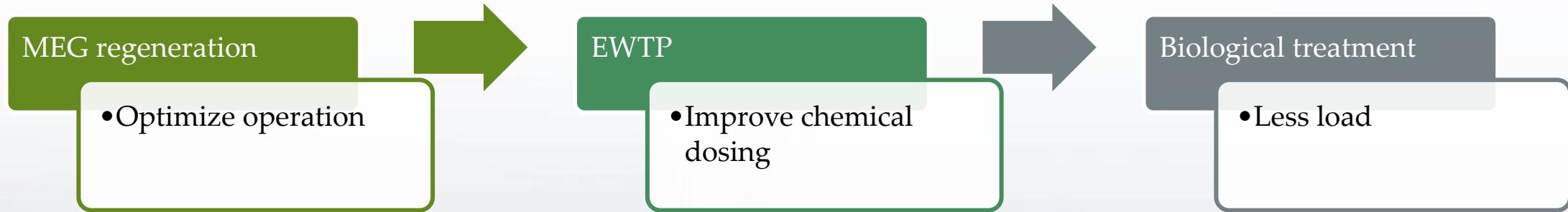


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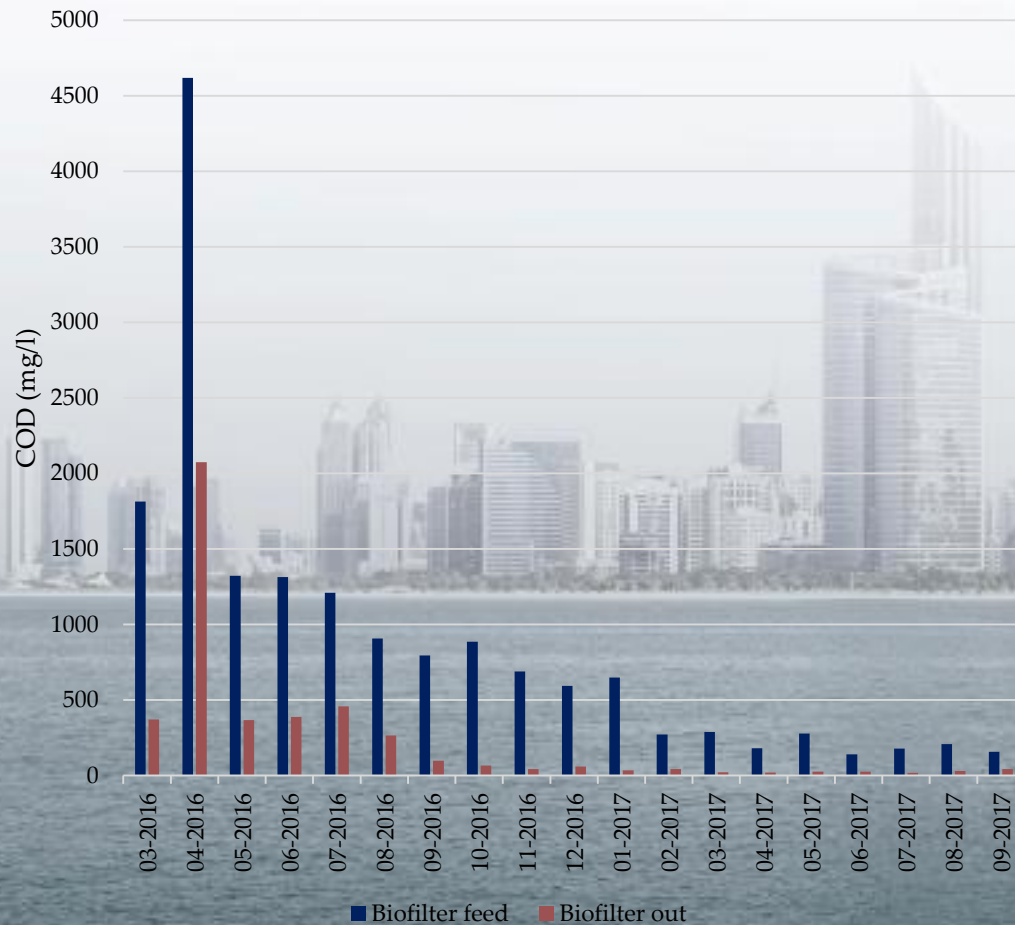
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SGP EWTP – COD reduction upstream of the biological treatment

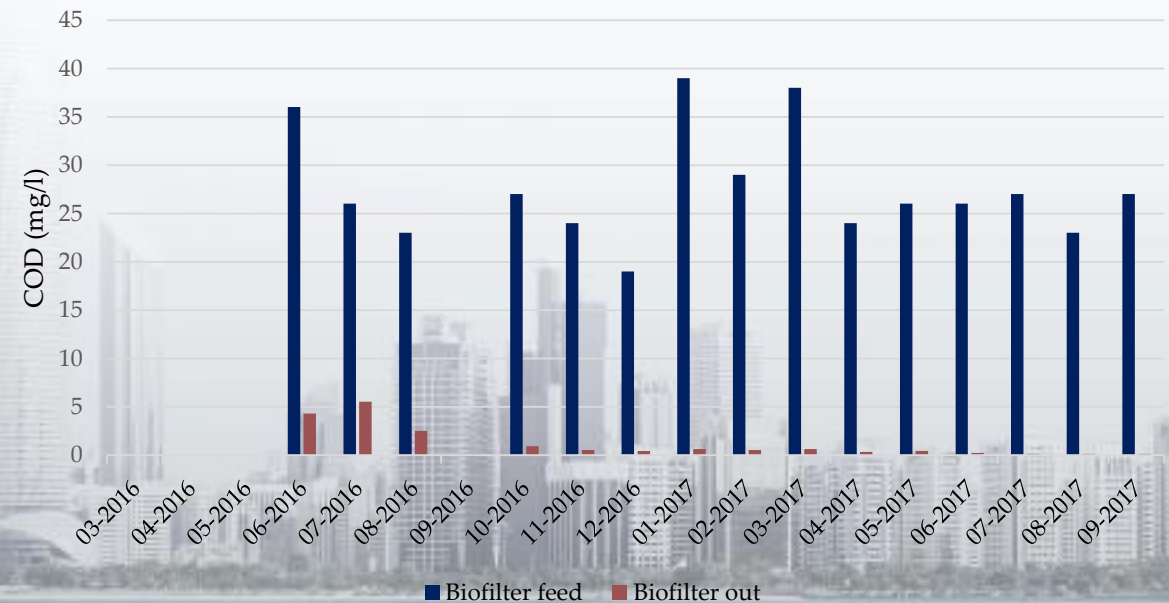


SGP EWTP – biological treatment performance

COD removal



Phenol removal



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Visual indication of performance across the EWTP



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Conclusions

- First 18 months of operation have shown the importance of:
 - Optimizing the upstream process to control load to the effluent treatment
 - Getting the chemical selection right
 - Maintaining stable operation of the EWTP
- Once the above issues were addressed good compliance with the plant's discharge permit was achieved



Thank you for listening

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