

Sandscaping

Innovative coastal management, working with nature
for multiple benefits

Coastal Futures 2017

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Sandscaping

Inspiration

Perspiration

Where could it work?

Will it happen?





Zandmotor:
Built in 2011
Size: 21.5m m³
Cost: £60m
Design life: 20 years

Zandmotor in the Netherlands

Flood defence (legal standard)

Experiment for long term sustainable coastal management:

- Reduce cost of nourishment
- Reduce disturbance of habitats £50m

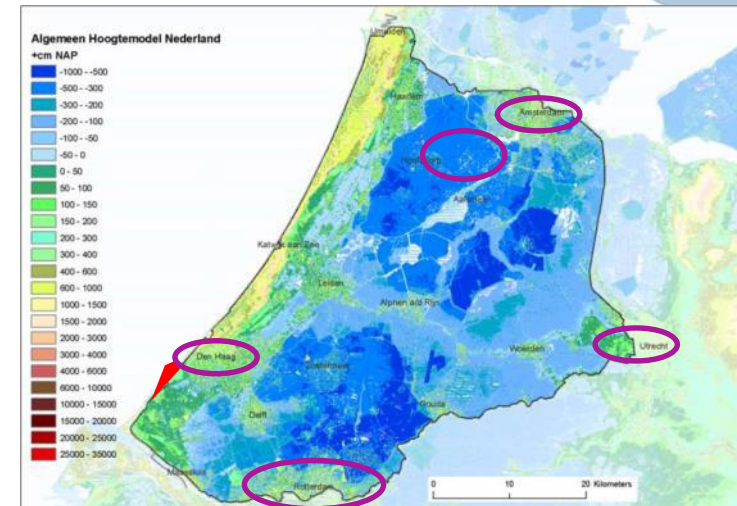


Image Rijkswaterstaat

Creating opportunity:

- Tourism and recreation £10m
- New habitats - in dredging areas and on the Zandmotor



Fifth anniversary:

- All happy!
- No final conclusions yet

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NL context: Innovation policy

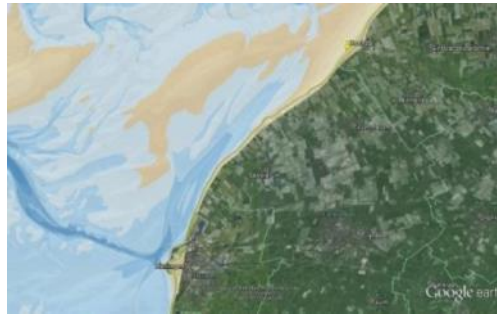
- Water Management is 1 of 9 'Top Sectors' in NL:
 - Driven by national urgency + export potential
 - Focus, funding & facilities
 - Similar to UK BIS' Eight Great Technologies
- Explicit policy to experiment with sandy solutions for the coast
 - Essential for NL to find new solutions
 - Acceptance that innovative solutions may not always provide maximum value for money – need to take a risk!
 - Financial risk only: can't take risks with flood protection!

UK

NL context: Building with Nature

Design to use natural processes to meet society's needs

- Oyster reefs
- Creating pioneer saltmarsh
- 'Feeding' mudflat development
- *Zandmotor*



Working with Natural Processes



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NL context: Multiple benefits

Flood risk investment as a driver for 'spatial quality':

- Government pays for flood risk management
- Expects local partners to match fund for spatial quality

Compare with Partnership Funding: similar but different



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Bring in the Dutch?



Not: big Dutch solutions; the context is too different



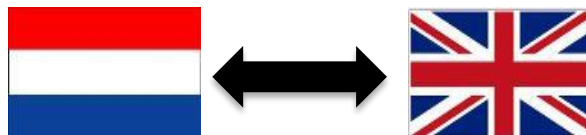
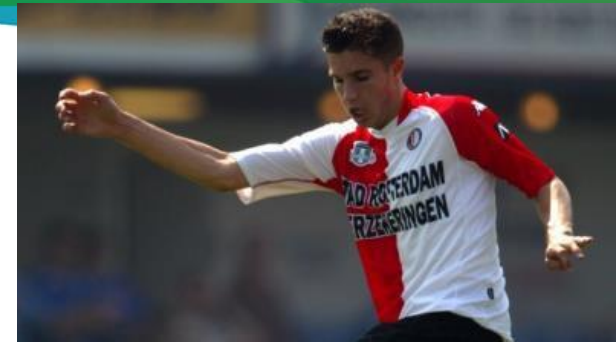
Inspiration from '**Delta approach**': everyone working together to solve a national problem



Translate & apply **innovations** developed with NL government funding



UK leads the world in flood response in maximising Return on Investment:
→ Export products!



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NL to UK

Inspirational...

- Large scale & innovative nature
- Multi-functional & multi-funding solution
- Adaptive
- Transformational



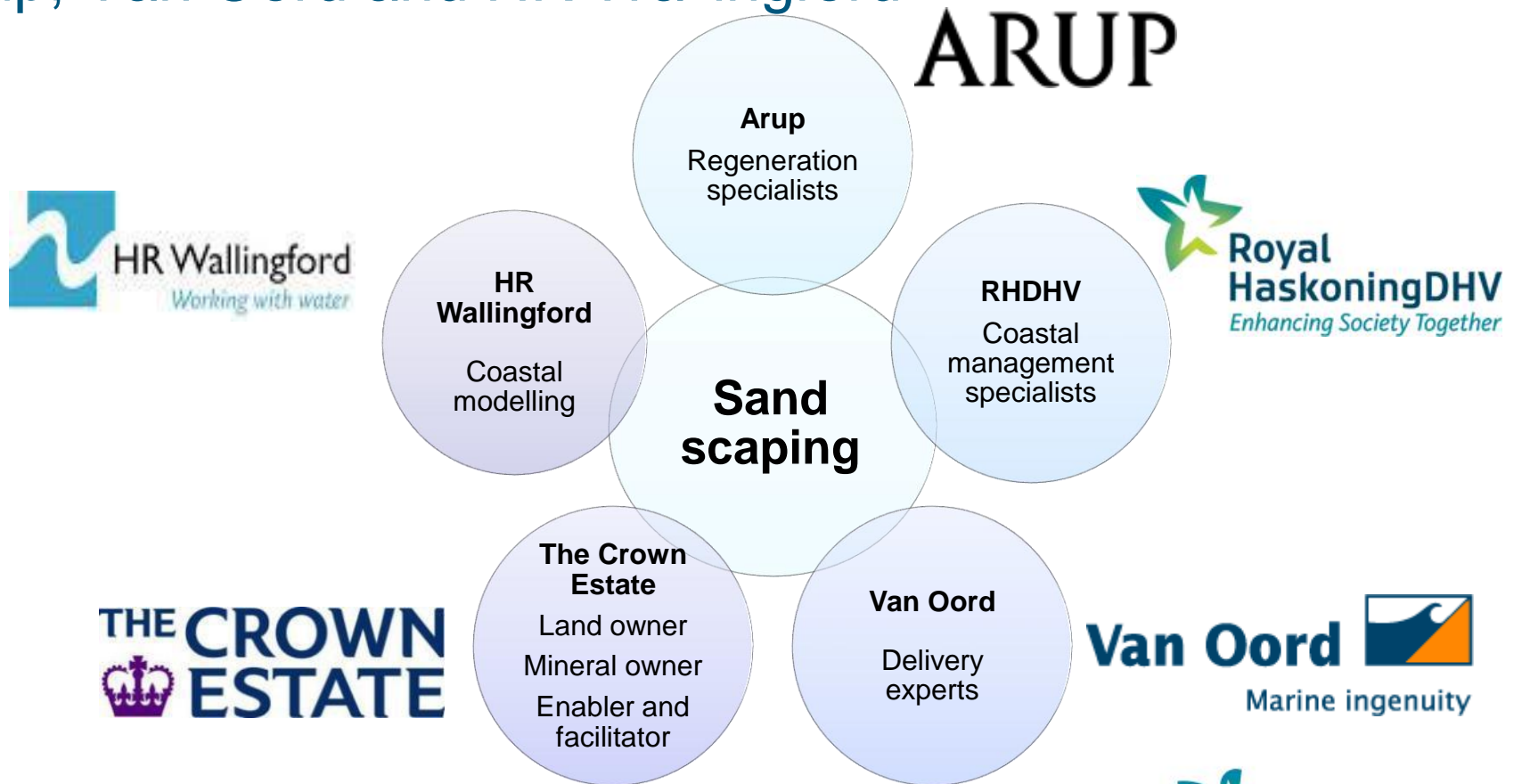
...But could it work in the UK?

- More complex coastlines
- Different governance & funding



Application in the UK: Sandscaping

The Crown Estate working with Royal HaskoningDHV, Arup, Van Oord and HR Wallingford



SAND SCAPING

Catalyst for coastal communities

Application in the UK: Sandscaping

What are we doing?

- National: profiling & enabling
- High-potential Sites
- Work with local parties on local cases



So what is Sandscaping?

- Soft coastal management
 - sand or shingle, or even mud
- Design to make use of natural processes
 - can be more natural & more efficient
- Large scale
 - to influence processes & create economies of scale
- Multi-functional = Multi-fundable
 - reduce risk but also create opportunity
- Flexible with a medium-term functional life
 - buying time for adaptation
- Long-shore interaction
 - potential for sequence of benefits



In the right place, and if designed well!

What will it take?

- Local ownership & drive
- Competitive business case
- Acceptable uncertainty
- Win-Win → Partnership of those who benefit & are willing to pay
- Please In My Back Yard



Sandscaping (with shingle) in Suffolk



Royal HaskoningDHV,
2012



Burningham, H. & French, J. 2014



HR Wallingford, 2016

Slaughden:

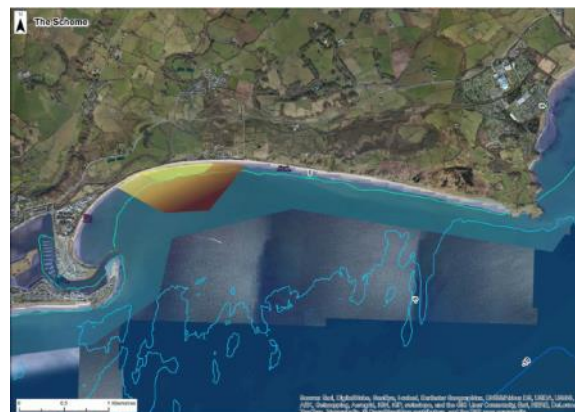
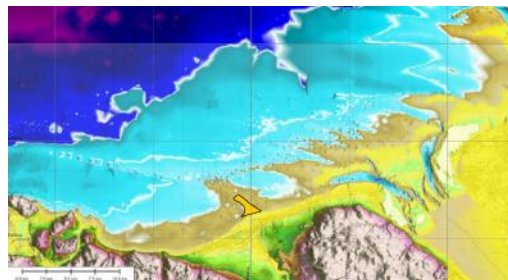
- Confirmed that it can work: 1.2M m³ for 50 years
- Next step: consenting and funding → maximise additional benefits

Potential in Wales

First sandscaping studies in 2011

Welsh Government's Coastal Risk Management Programme

North Wales, Pwllheli



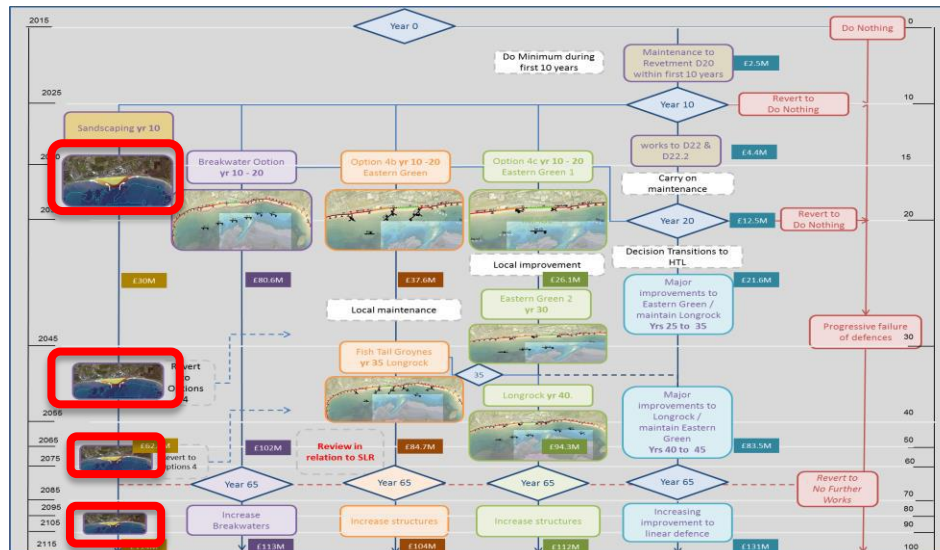
Penzance

Decision pathway strategy

One of the options for the next 10 years

Drivers:

- Support regeneration
- Bring sediment to the shoreline



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Bacton, North Norfolk



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Conclusions

- Zandmotor NL is a promising example of innovative coastal management: building with nature, multi-benefits, efficiencies, adaptive
- Sandscaping: Inspiration → Perspiration → Implementation
- Good example of UK benefitting from innovations tried & tested in NL
- Various promising locations on the UK coast

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