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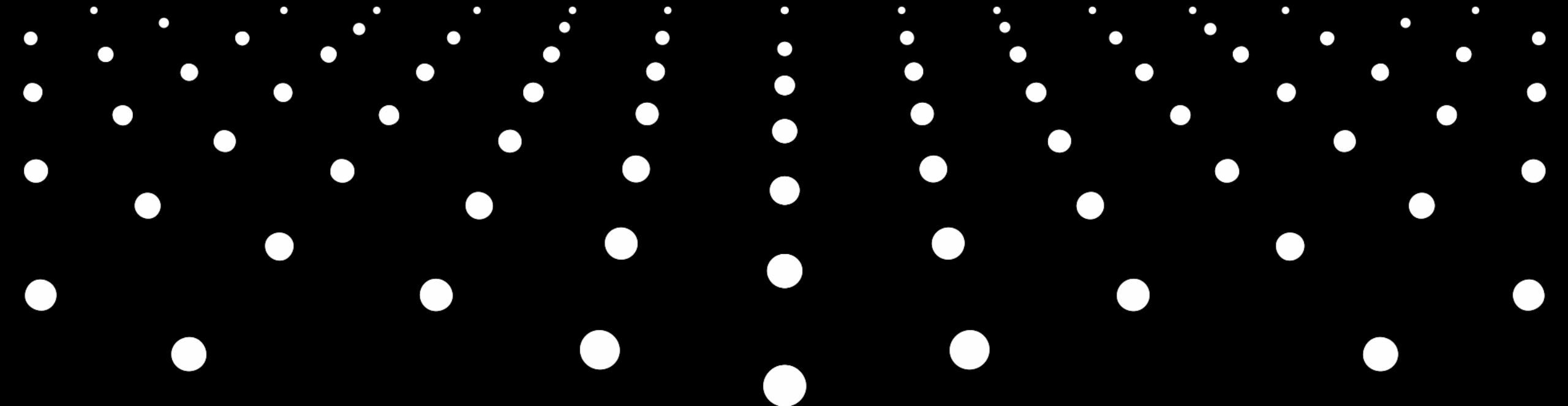
Update on Eskdalemuir Technical Consultation Points

Industry Briefing
23rd May 2026

Prepared by Dr Mark-Paul Buckingham



Technical Aspects

- Seismic Impact Limit – SIL per turbine constraint
- Headroom = finite resource /cumulative constraint
- Industry Tool = system interface/gateway

What is SIL

"How much seismic budget does each MW consume?"

- nm / √MW
- Measures seismic efficiency of a turbine
- Applies to every turbine individually
- SIL range (0.004614 – 0.005479) to get all the projects away in queue ~ 3GW

"If applicants do not submit a valid SGV Report, or if any of the turbines within the proposed development exceed the SIL… the Determining Authority will decline to determine or accept the application."

What is Headroom

Total Budget – Budget Used = Headroom

Finite resource + queue

Range 0.206324 – 0.245040 nanometres nm remaining

Allocated first come, first served

Industry Tool

- Industry Tool Available at Scottish Renewables Eskdalemuir Web Page

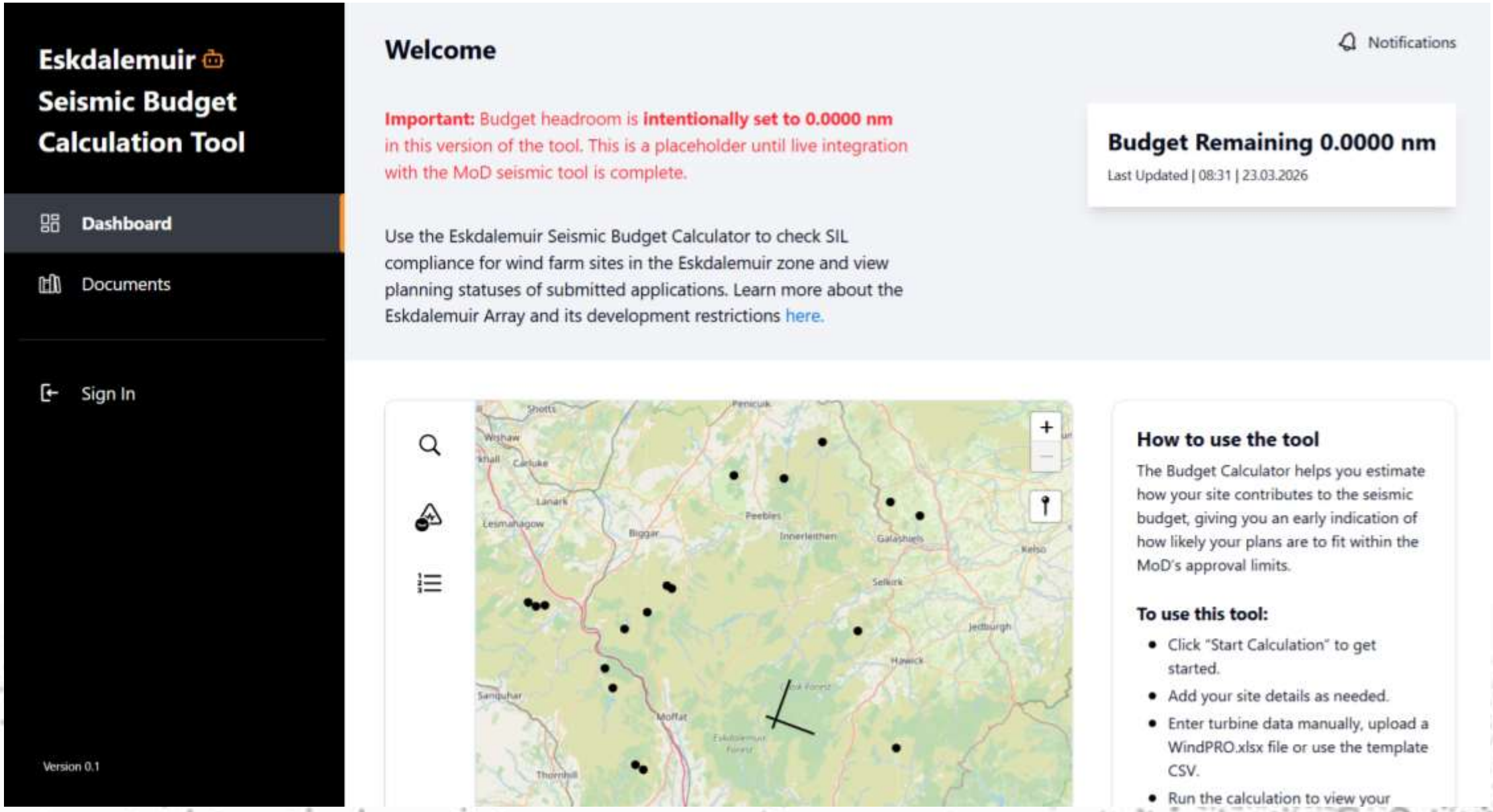
HUGE DISCLAIMER

INDUSTRY TOOL – **AWAITING MOD TOOL AND TWO-WAY COMMS**

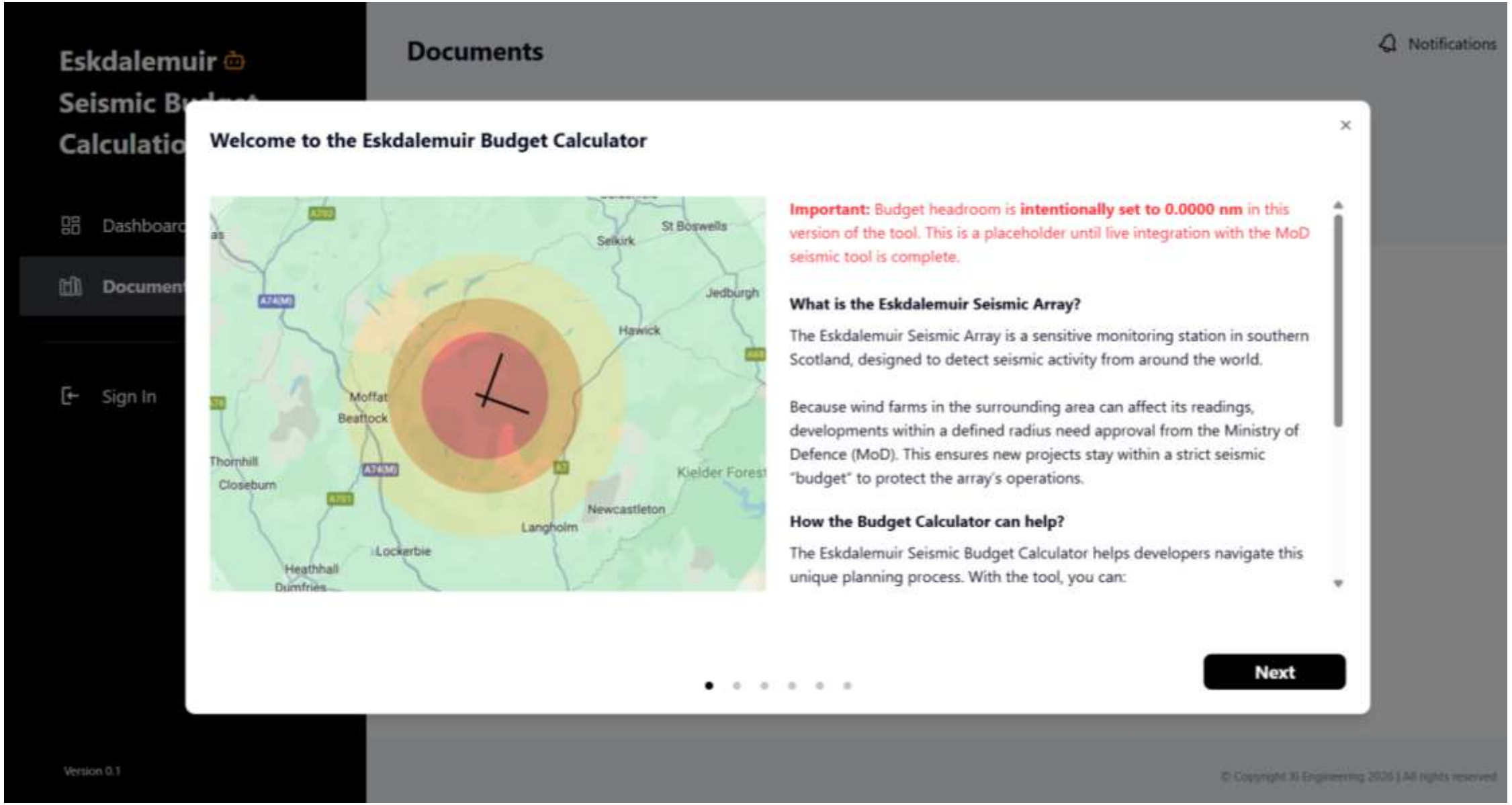
INDUSTRY TOOL ‘QUEUE’ = **PLACEHOLDER i.e NOT CORRECT**

SGV OUTPUT REPORTS **PLACEHOLDER** – STAKEHOLDER REPORT ONLY

Industry


Eskdalemuir Seismic Budget Calculation Tool
Dashboard
Documents
Sign In
Version 0.1
Welcome
Notifications
Important: Budget headroom is intentionally set to 0.0000 nm in this version of the tool. This is a placeholder until live integration with the MoD seismic tool is complete.
Use the Eskdalemuir Seismic Budget Calculator to check SIL compliance for wind farm sites in the Eskdalemuir zone and view planning statuses of submitted applications. Learn more about the Eskdalemuir Array and its development restrictions here.
Budget Remaining 0.0000 nm
Last Updated | 08:31 | 23.03.2026
How to use the tool
The Budget Calculator helps you estimate how your site contributes to the seismic budget, giving you an early indication of how likely your plans are to fit within the MoD's approval limits.
To use this tool:
Click "Start Calculation" to get started.
Add your site details as needed.
Enter turbine data manually, upload a WindPRO.xlsx file or use the template CSV.
Run the calculation to view your

Industry Tool



Approved Turbine List (ALT) VS List of Approve Turbine Types (LATT)

ATL "A list of seismic information, collected in accordance with the methodology set in Appendix 4, outside of the Eskdalemuir region and their results validated by an MOD Approved Contractor."

LATT "A list of seismic turbine information which have been generated in the Eskdalemuir region, that are contained within the MOD safeguarding tools."

	ATL	LATT
Where measured	Outside Eskdalemuir	Inside Eskdalemuir
Geological accuracy	Lower	High
Who verifies	MOD-approved contractor	MOD directly
Used in tool	☑	☑
Penalty applied	YES (GSF)	NO

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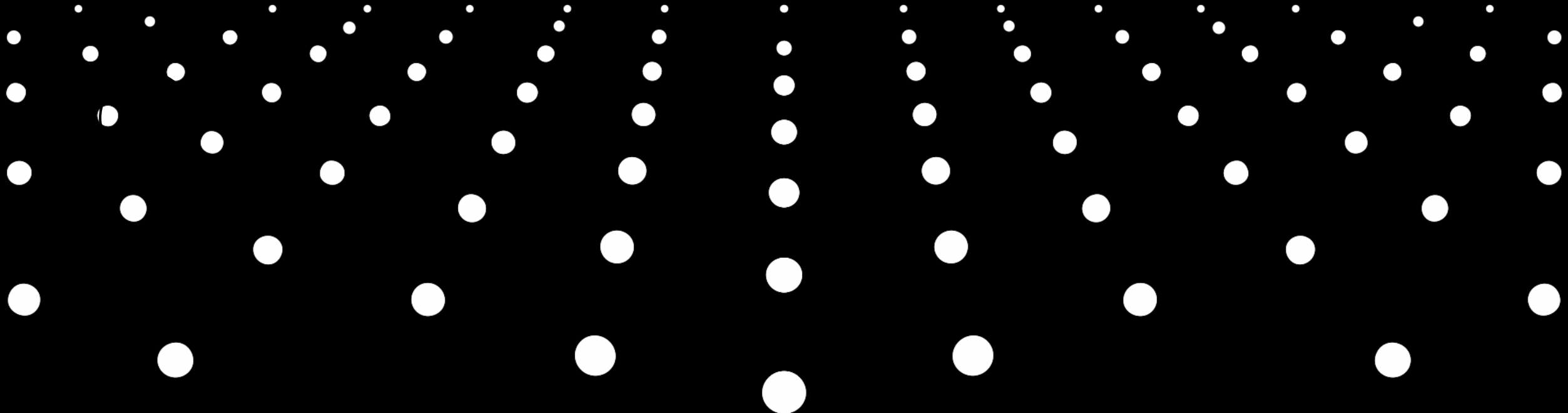

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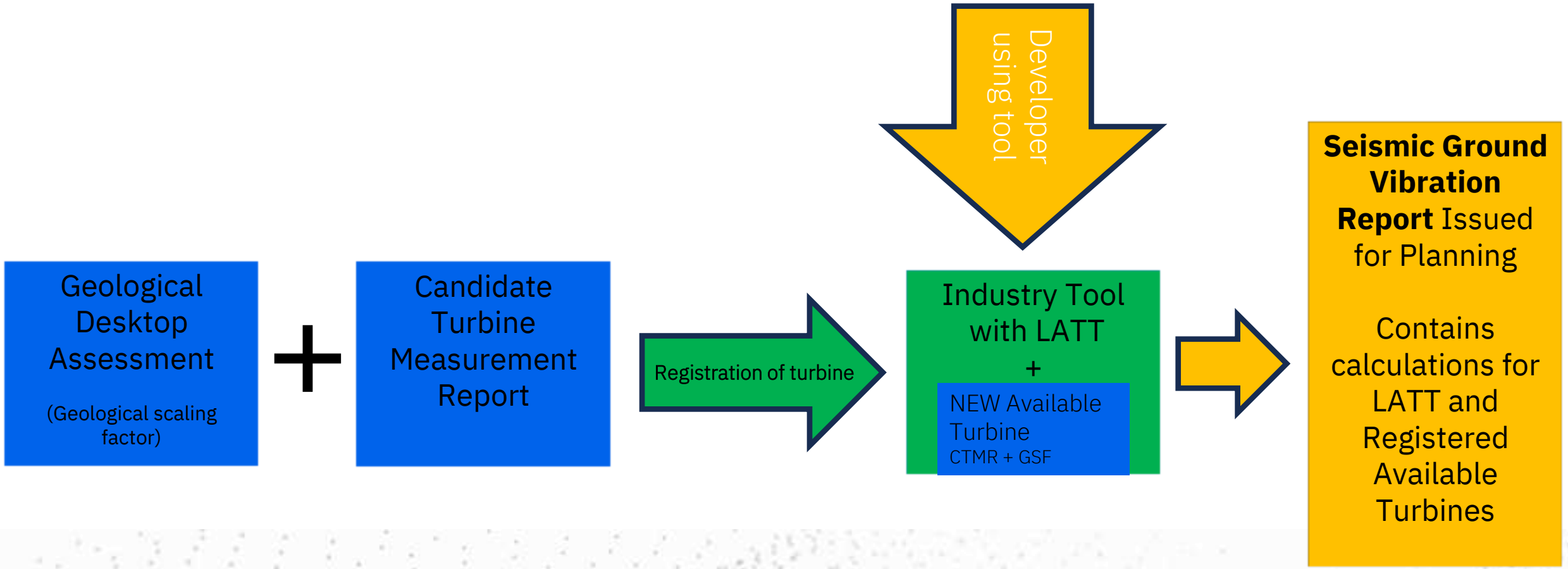
Registering on the ATL

- Geological Assessment of Potential Sites
- Deployment of Seismometers Field Measurement
- Geological Translation and report Issued
- Industry Registered Turbine Type
- Submission to planning
- MoD List of Approved Turbine Types
- Measured post deployment within EKA
- Reregistered without GS on ALT and LATT

Industry Tool Turbine Registration



Developer Process Post Consent

Pre Construction Measurement

Background SGV Measurement

Prior to erection of turbines

De-risk post measurement

Operational Validation of Seismic Signature

Post Construction Measurement

Remove background and GSF

Re -Registration of turbine without GSF and background

Industry Tool with LATT + Candidate No background

Update to Industry tool

Re -Registration of turbine without GSF and background

MoD Tool

New Turbine Registered to LATT
MoD Recalculate budget Headroom

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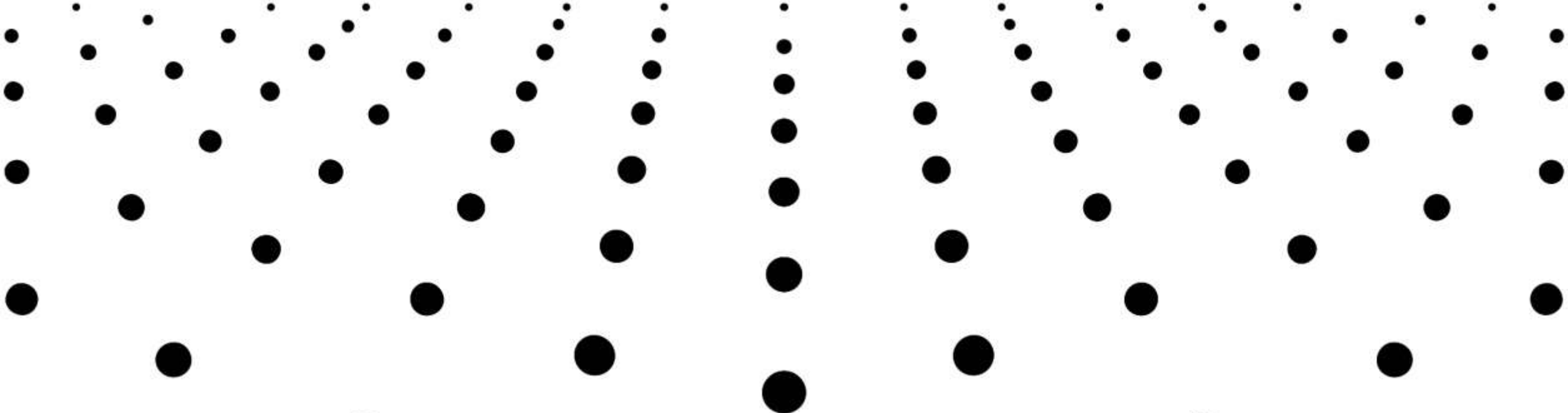
People trust us with their hardest problems - and we solve them together.



EKA Maths Impact on Renewables

Power	HubHeight	Rotor	Equivalent number of turbines at 50 km					
MW	m	m	Turbine	Siemens	Senvion	GE	Enercon	Nordex
1	56.4	64.3	7703	6452	8749	5877	9073	7263
2	78.6	90.9	7120	5737	8643	5583	9169	6931
3	95.6	111.3	6889	5612	8600	5556	9206	6774
3.5	103	120.3	6771	5527	8575	5520	9221	6697
4	110	128.6	6671	5447	8553	5485	9234	6634
5	122.6	143.7	6508	5319	8514	5435	9259	6529
6	134	157.4	6369	5220	8481	5396	9281	6438
7	144.5	170.1	6249	5135	8449	5360	9302	6360
8	154.3	181.8	6144	5061	8421	5328	9322	6290

Seismic Impact Limit (SIL) and Exclusion Zone Extension

	No Exclusion Zone		15 km exclusion zone -	
SIL Target (GW)	Additon Capacity	Budget headroom Leftover (if yes level in nm)	Additon Capacity	Budget headroom Leftover (if yes level in nm)
1	1.804	No	3.586	No
1.5	3.042	No	3.918	0.3152
2	3.710	No	3.918	0.3028
2.5	4.416	0.3281	3.918	0.2941

	No Exclusion Zone		15 km exclusion zone	
SIL Target (GW)	Additon Capacity	Budget headroom Leftover (if yes level in nm)	Additon Capacity	Budget headroom Leftover (if yes level in nm)
1	3.227	No	3.918	0.2970
1.5	4.416	0.318914889	3.918	0.2814
2	4.416	0.301943301	3.918	0.2725
2.5	4.416	0.2906	3.918	0.2663

Technical Work Progress

Proposed technical move from 2014 XI/AWE worst case algorithm to Empirical data (underlying SG phases 4-5)

Slides: AWE (MoD's subcontracted expert) acceptance of Xi Engineering approach to measuring Seismic Ground Vibration

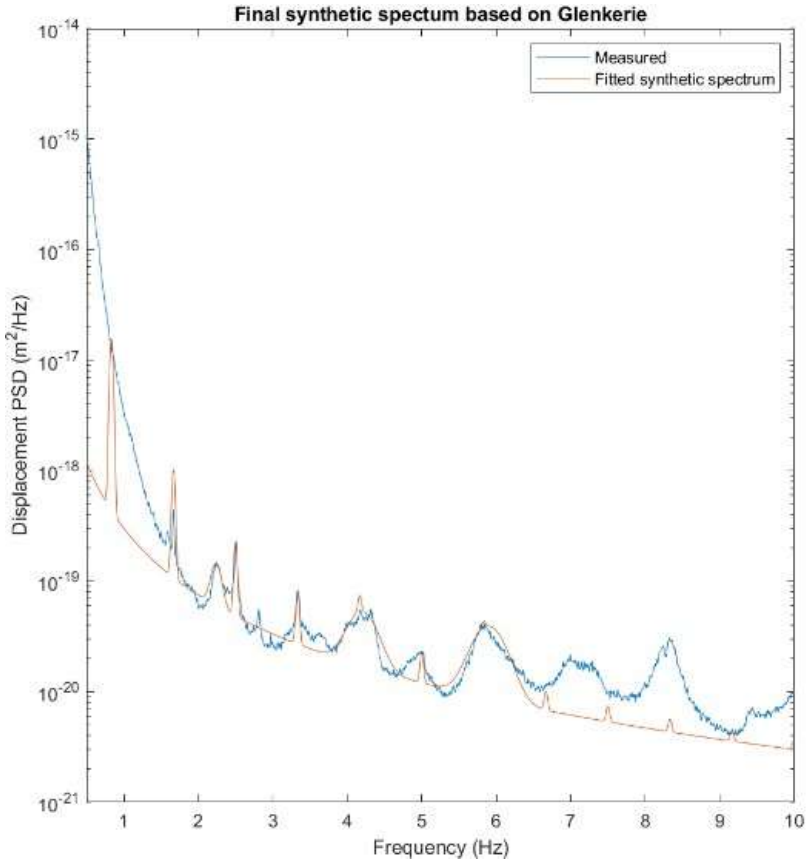
3 x flowcharts issued to MoD Jan 25

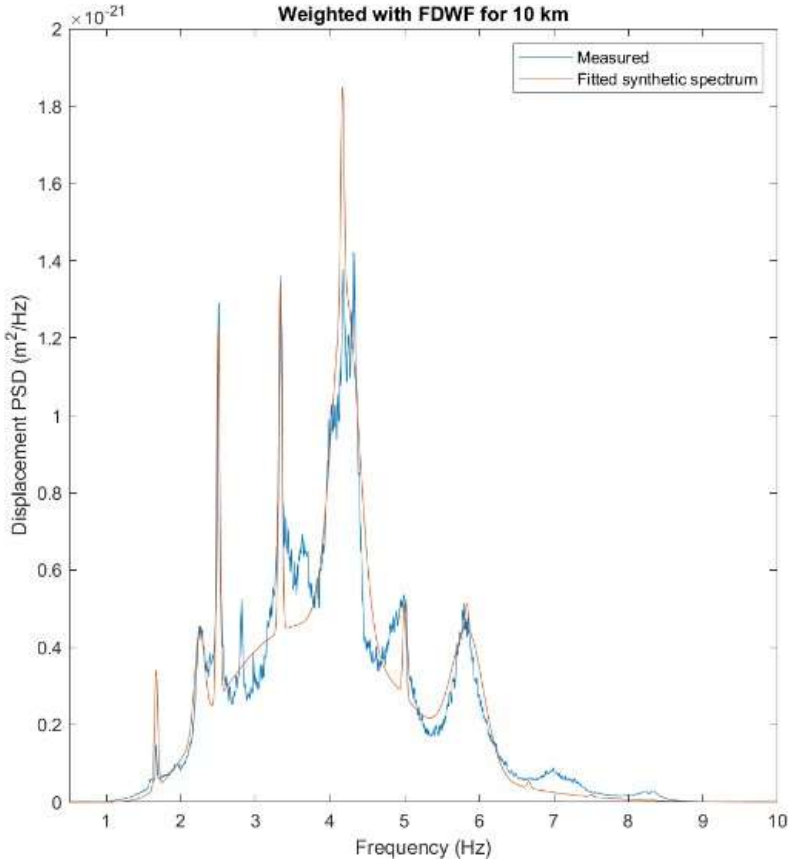
5 AIFCL Work packages

1. Engagement with stakeholders – Xi contracted to end of Oct 25
2. MoD requested actions on Phase 4 & 5
3. Technical Documentation of Process
4. Industry Open Access Tool
5. MoD Tool

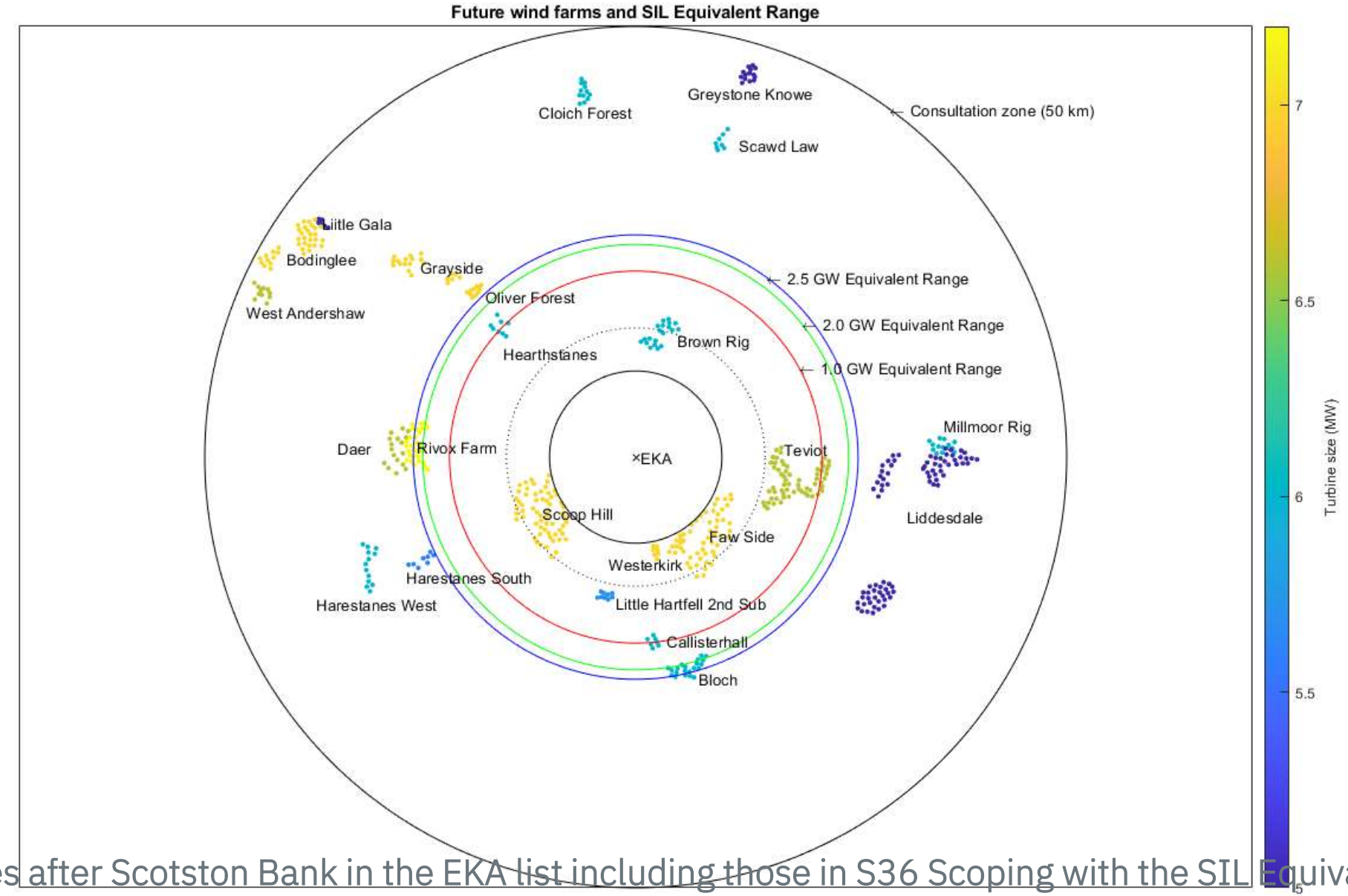
Refinement of the source term (Xi 2023)

- Extra structural resonance terms added
- Fitting weighted to the detection frequency-sensitivity of the Array (“FDWF”) to turbines at 10 km distance (“highest impact”)
- Example, Glenkerie:
  - 11 Vestas V80
  - Predicted SGV (nm) at Glenkerie ~29 km
  - Model / WCT = 0.74
  - Model / Measured = 1.04





From Xi 2023 report: AIFCL-101-Phase4-Rev13



All turbines after Scotston Bank in the EKA list including those in S36 Scoping with the SIL Equivalent Range for 1.0 GW, 2.0 GW and 2.5 GW based on a 7.0 MW turbine

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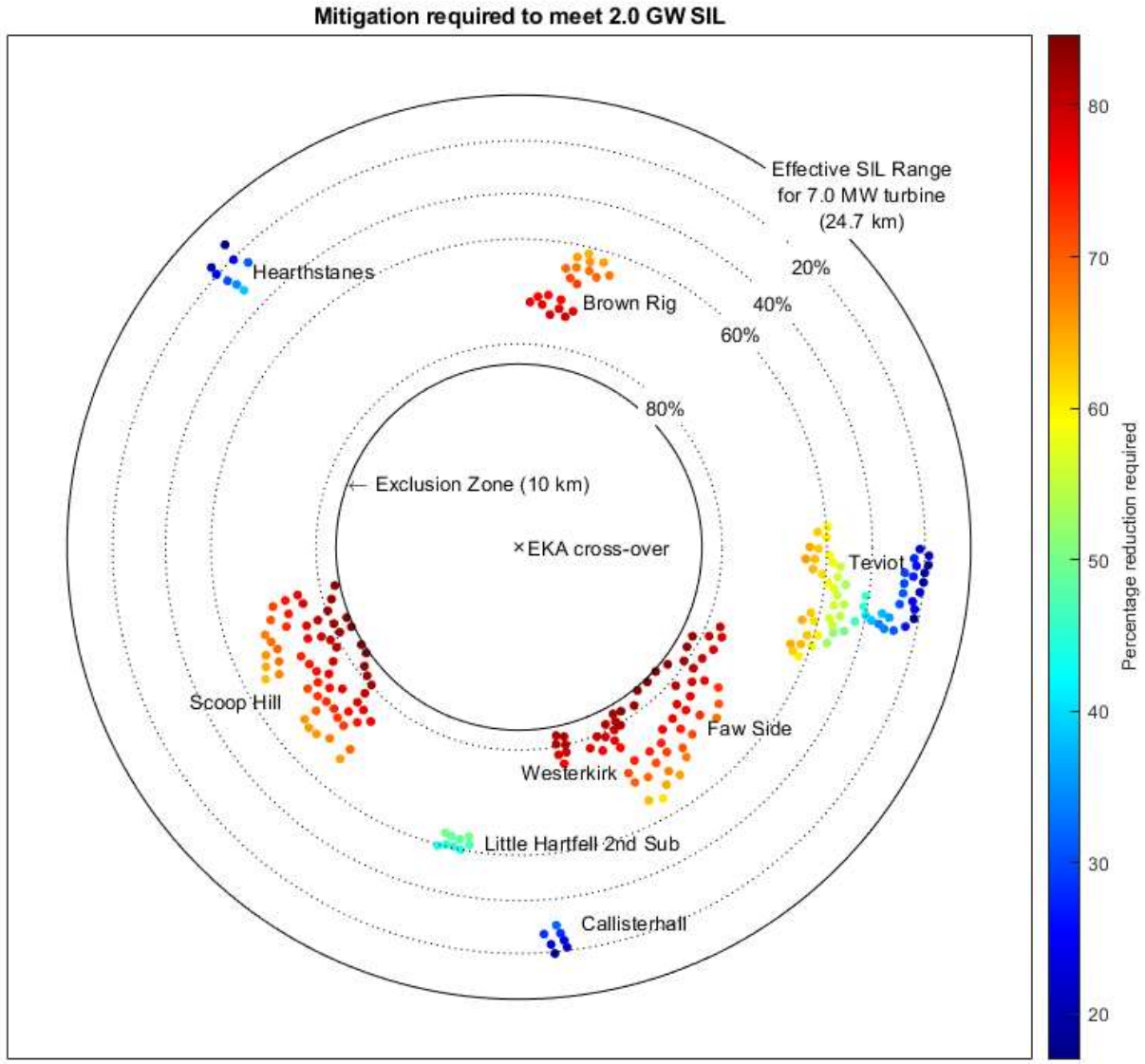
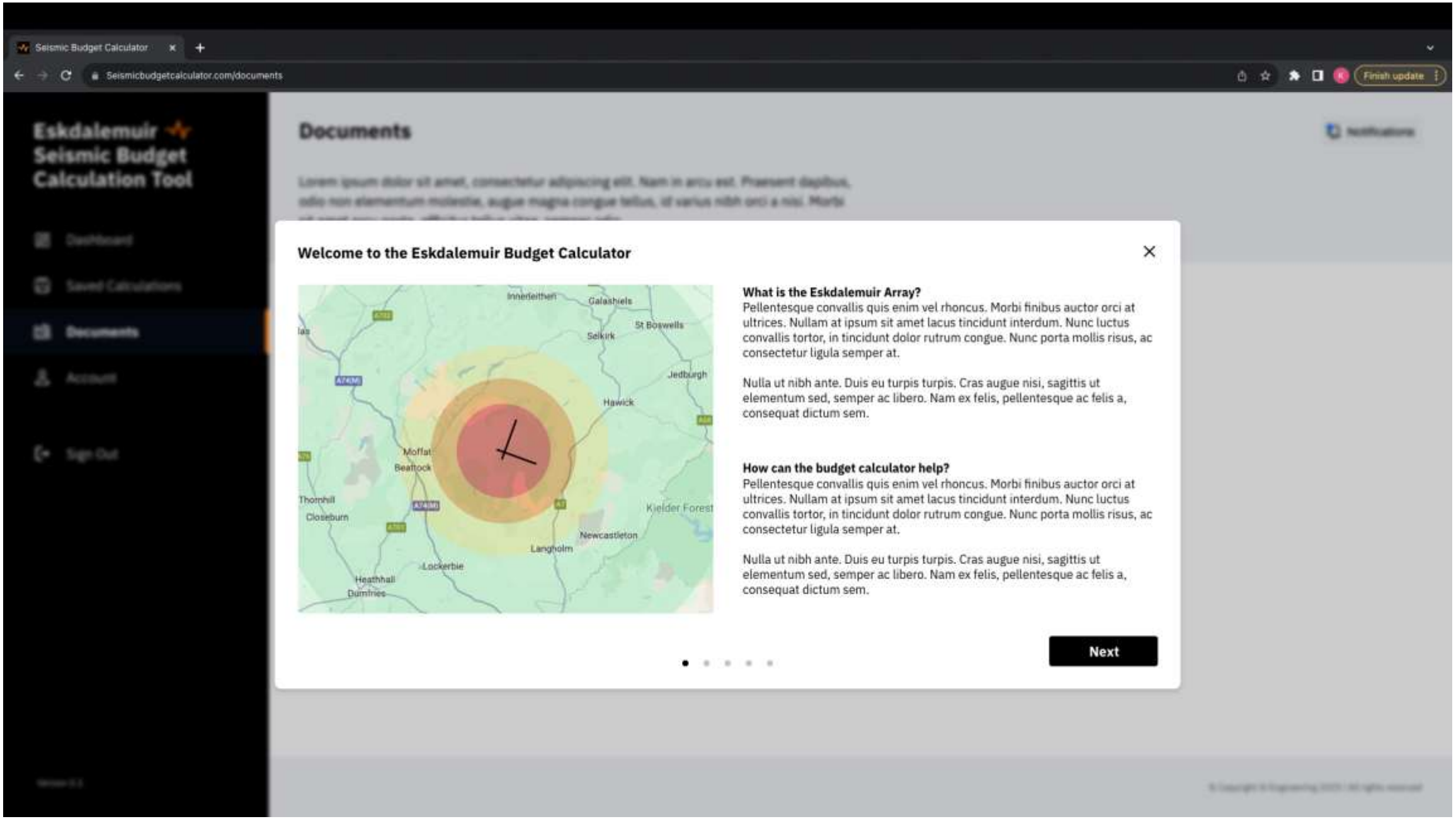
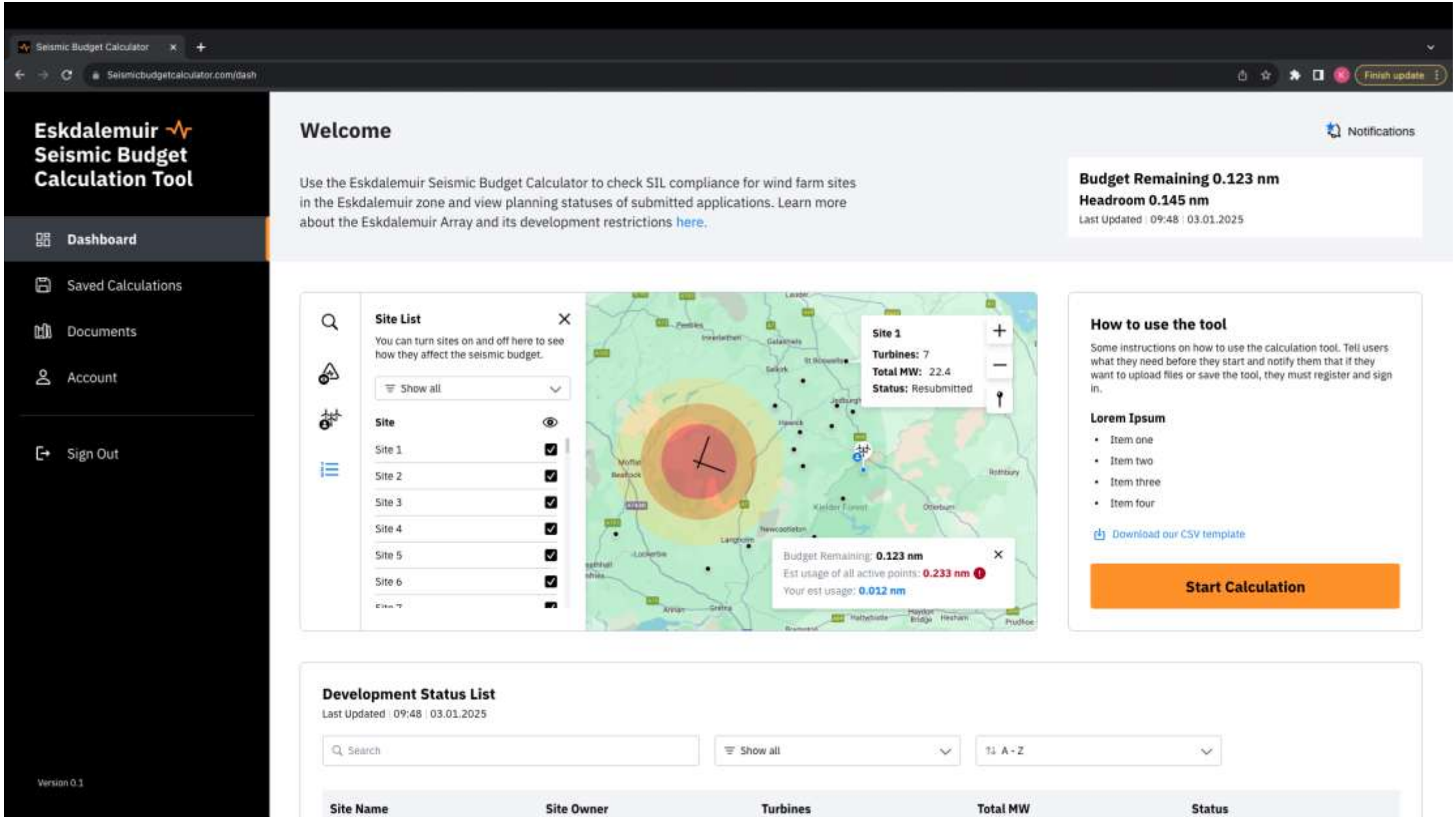


Levels of mitigation that may be required for individual turbines to operate within the SIL for targeted of 2.0GW. The contours show mitigation levels at 20% intervals and for illustrative purposes only as the mitigation level will be dependent on the make and model of the turbine and its rated power


Seismic Budget Calculator
Seismicbudgetcalculator.com/documents
Finish update
Eskdalemuir Seismic Budget Calculation Tool
Documents
Welcome to the Eskdalemuir Budget Calculator
Innerleithen
Galashiels
St Boswells
Selkirk
Jedburgh
Hawick
Moffat
Beattock
Thornhill
Closeburn
Kielder Forest
Newcastleton
Langholm
Lockerbie
Heathhall
Dumfries
What is the Eskdalemuir Array?
Pellentesque convallis quis enim vel rhoncus. Morbi finibus auctor orci at ultrices. Nullam at ipsum sit amet lacus tincidunt interdum. Nunc luctus convallis tortor, in tincidunt dolor rutrum congue. Nunc porta mollis risus, ac consectetur ligula semper at.
Nulla ut nibh ante. Duis eu turpis turpis. Cras augue nisi, sagittis ut elementum sed, semper ac libero. Nam ex felis, pellentesque ac felis a, consequat dictum sem.
How can the budget calculator help?
Pellentesque convallis quis enim vel rhoncus. Morbi finibus auctor orci at ultrices. Nullam at ipsum sit amet lacus tincidunt interdum. Nunc luctus convallis tortor, in tincidunt dolor rutrum congue. Nunc porta mollis risus, ac consectetur ligula semper at.
Nulla ut nibh ante. Duis eu turpis turpis. Cras augue nisi, sagittis ut elementum sed, semper ac libero. Nam ex felis, pellentesque ac felis a, consequat dictum sem.
Next


Seismic Budget Calculator
Seismicbudgetcalculator.com/dash
Finish update
Eskdalemuir Seismic Budget Calculation Tool
Dashboard
Saved Calculations
Documents
Account
Sign Out
Version 0.1
Welcome
Notifications
Use the Eskdalemuir Seismic Budget Calculator to check SIL compliance for wind farm sites in the Eskdalemuir zone and view planning statuses of submitted applications. Learn more about the Eskdalemuir Array and its development restrictions here.
Budget Remaining 0.123 nm
Headroom 0.145 nm
Last Updated | 09:48 | 03.01.2025
Site List
You can turn sites on and off here to see how they affect the seismic budget.
Show all
Site
Site 1
Site 2
Site 3
Site 4
Site 5
Site 6
Site 1
Turbines: 7
Total MW: 22.4
Status: Resubmitted
Budget Remaining: 0.123 nm
Est usage of all active points: 0.233 nm
Your est usage: 0.012 nm
How to use the tool
Some instructions on how to use the calculation tool. Tell users what they need before they start and notify them that if they want to upload files or save the tool, they must register and sign in.
Lorem Ipsum
Item one
Item two
Item three
Item four
Download our CSV template
Start Calculation
Development Status List
Last Updated | 09:48 | 03.01.2025
Search
Show all
A - Z
Site Name
Site Owner
Turbines
Total MW
Status

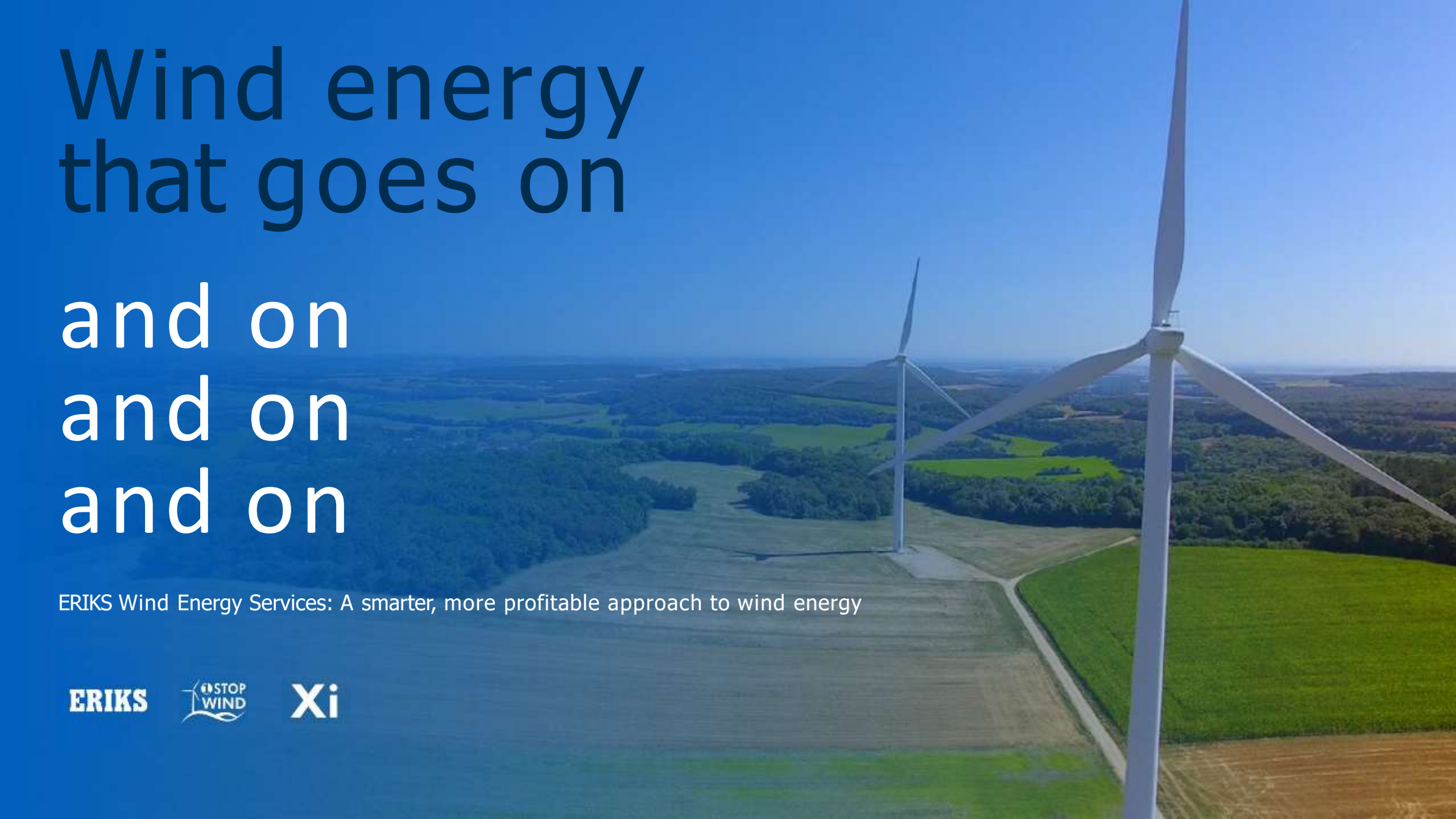
Timelines and Outstanding Actions

- MoD audit of sites within the region (September 25?)
- SIL value for 2GW defined as per Audit.
- MOD to formally sign off AIFCL work packages
- MOD response to consultation to be published
- MOD Tool Build and Deliver
- UK Government Consultation on SIL October 2025
- Legislation for SIL

Wind energy that goes on

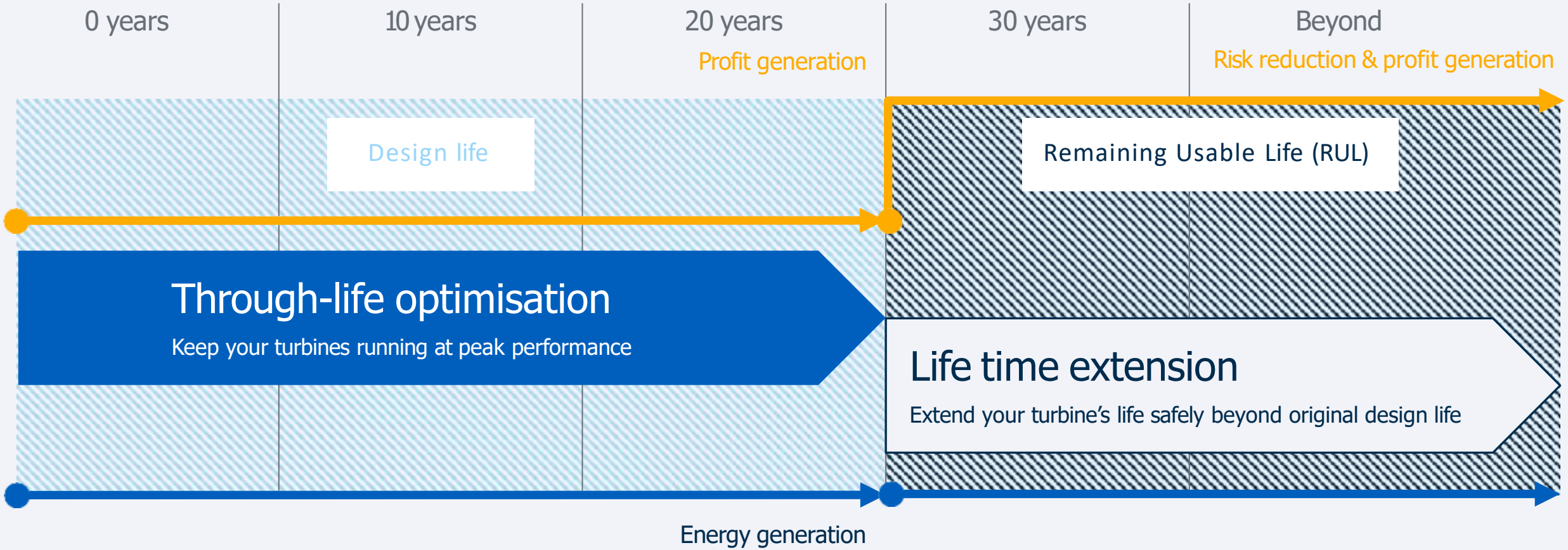
and on
and on
and on

ERIKS Wind Energy Services: A smarter, more profitable approach to wind energy



And here's how…

A fully integrated solution



The process

By analysing historical performance, environmental exposure, and mechanical stress factors, we provide a clear roadmap for optimising each turbine's longevity.

The higher the number the higher level of confidence and accuracy (1-6)

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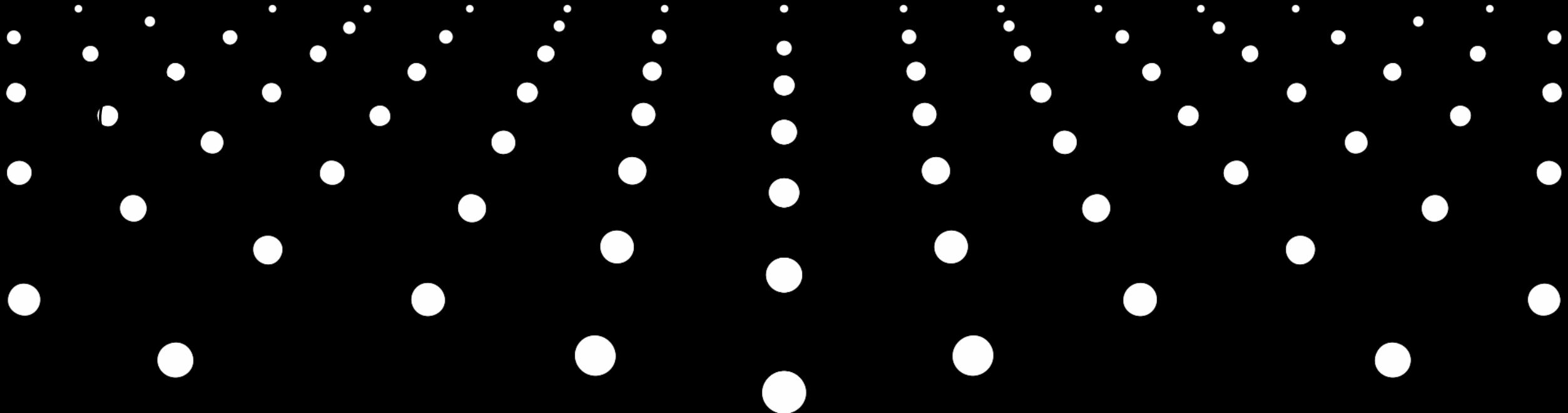

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