PROSPEX

LONDON

December 2011

HUB ANALYSIS

Based on Hannon Westwood data:
fields, NTDs, discoveries, prospects, pipelines, hubs

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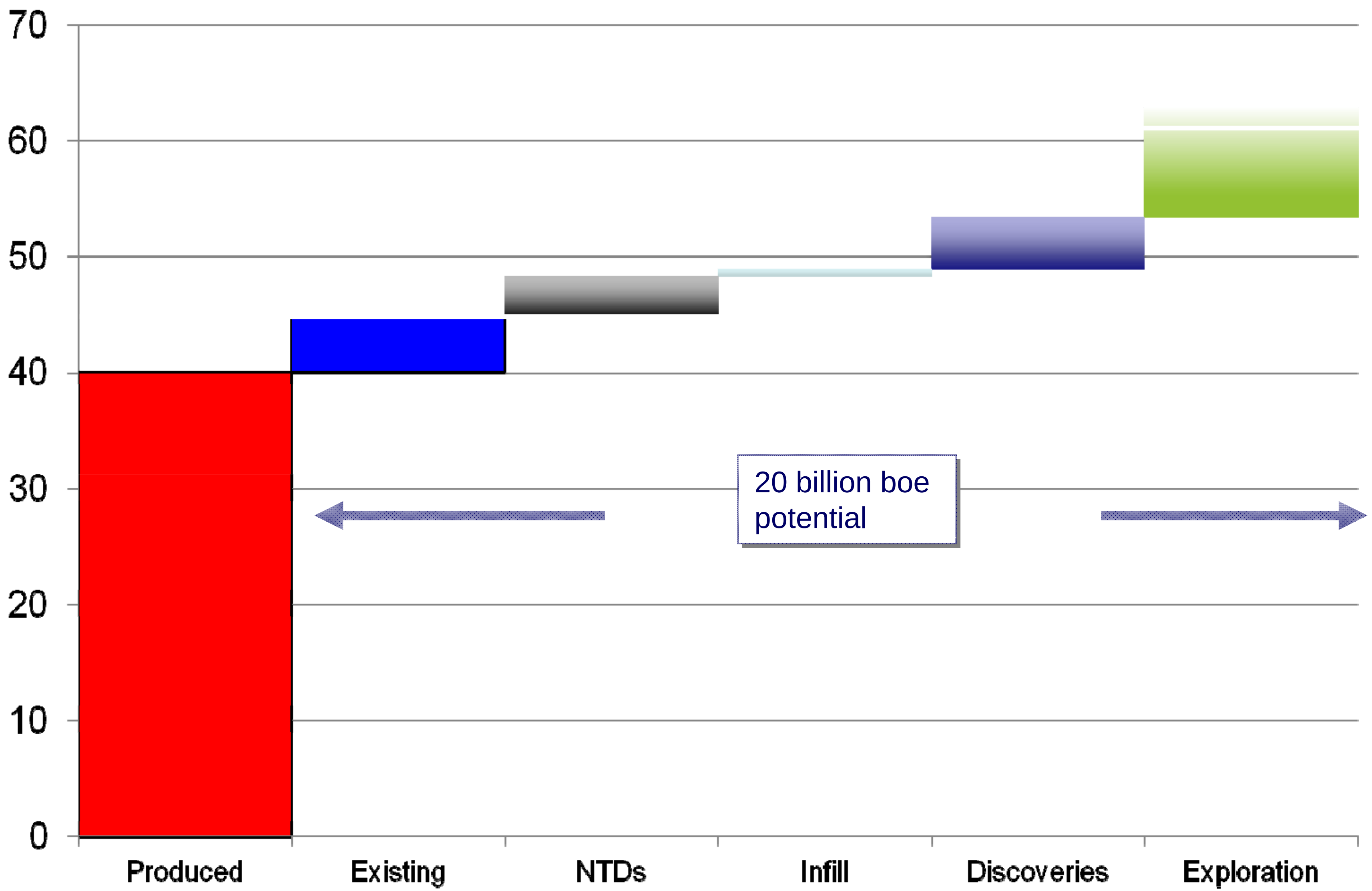
UKCS RESOURCE TECHNICAL POTENTIAL – 60 billion boe



Assumes high gas prices and ignores economic cut offs to give a technical potential

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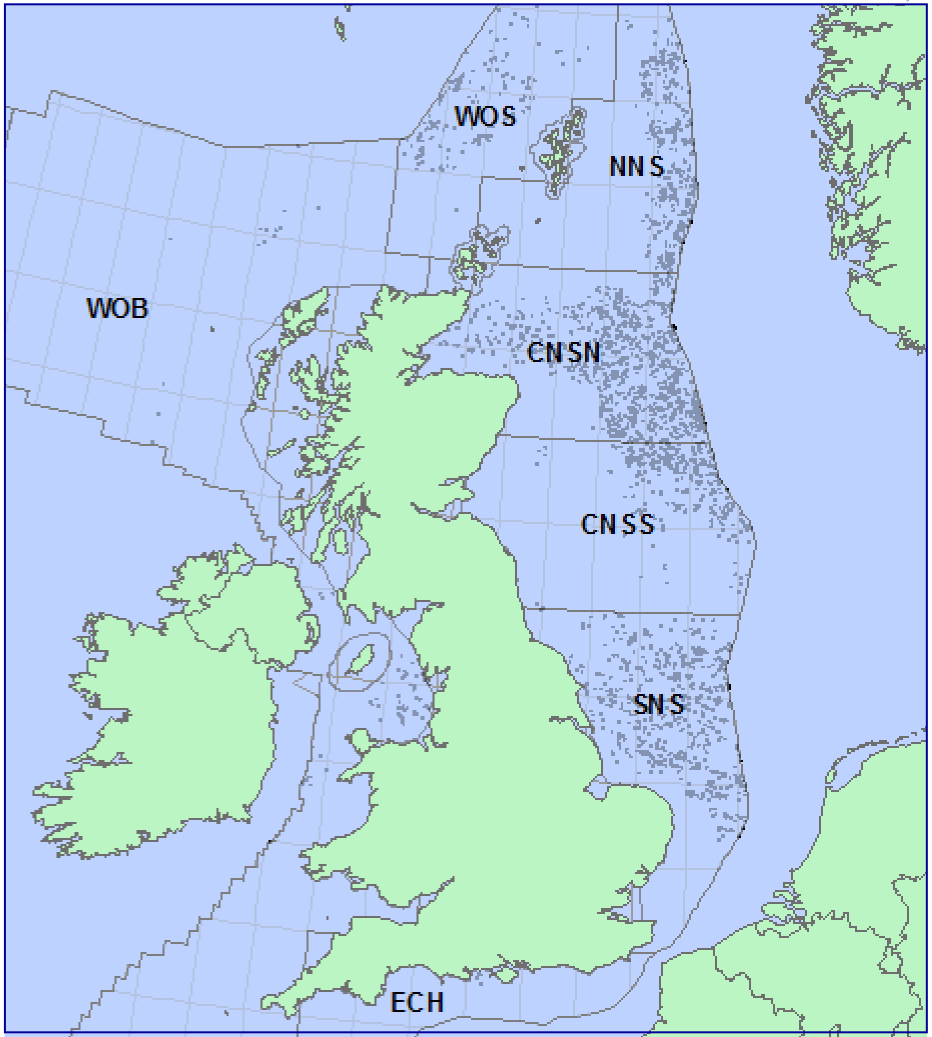
TOTAL RESOURCE

Technical recoverable: 20000 mmboe



Practical recoverable: 13000 mmboe

Oil $

tax

dpi

E&A rig

Export

477 **discoveries** & NTD's: 10500 mmboe

1836 **prospects**: 71000 mmboe

Risks down to **c. 15,000 mmboe:**

Add in **Fields @ c. 5000 mmboe**

Estimate 7000 mmboe is already lost to lack of pace in activity; commercial cut-offs; tax levels

So gives technical recoverable: 20000 mmboe

And practical recoverable: 13000 mmboe

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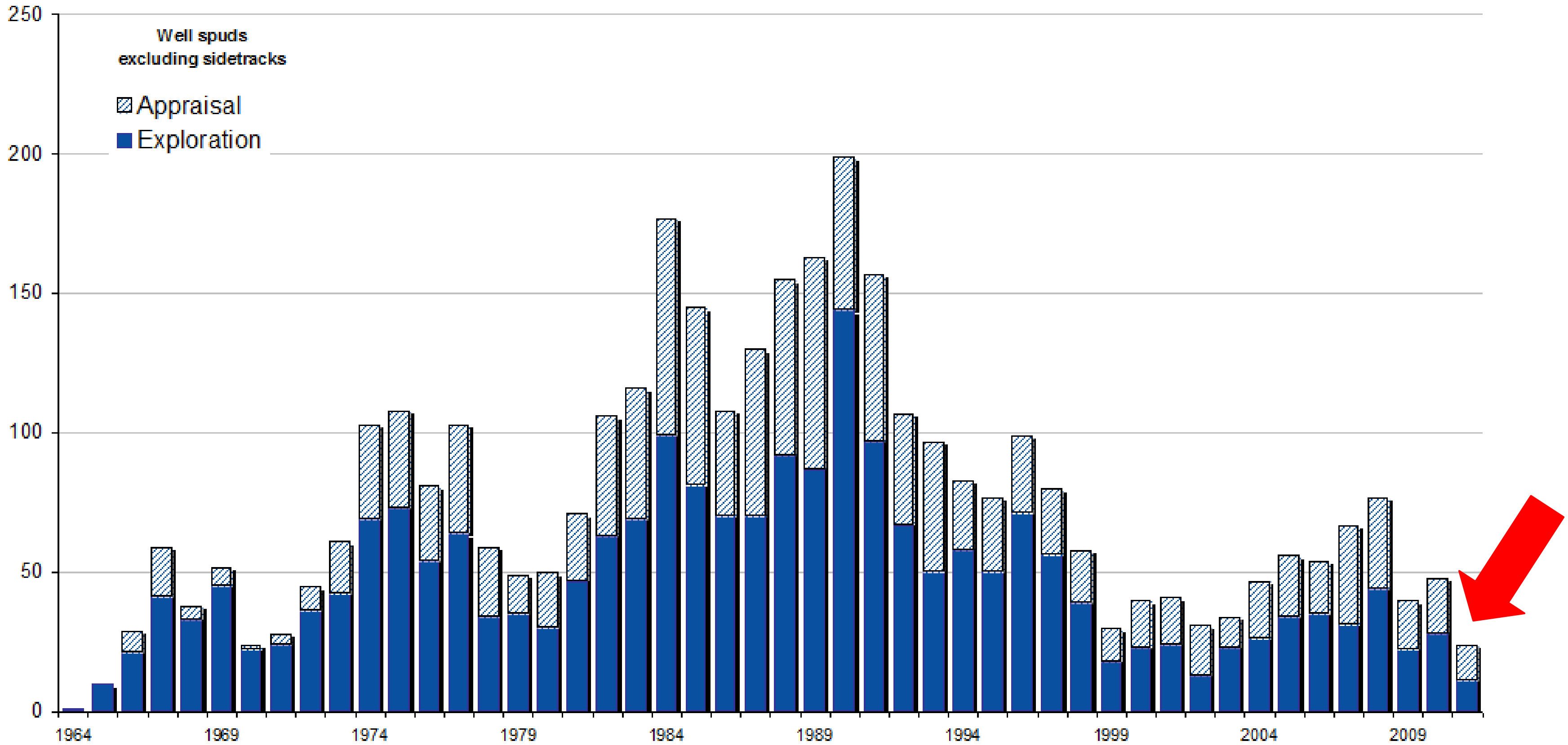
E & A ACTIVITY AT A LOW



2011 E&A well spuds amongst the lowest in 45 years
Ideal well count is about 50 wells per year

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OWNERSHIP RESERVE CHANGES & FRAGMENTATION

2004: 78 companies

1st Tier >1000 mmboe 4 companies 50%	BP Shell ExxonMobil TotalFinaElf			
2nd Tier 200 - 1000 mmboe 9 companies 35.50%	ConocoPhillips ChevronTexaco Centrica	Agip BG Talisman	Amerada Kerr-McGee Marathon	
3rd Tier 10 - 200 mmboe 30 companies 14.00%	Apache CNR BHP Gaz de France Burlington Statoil Petro-Canada Paladin	Nippon Intrepid Perenco OMV Murphy Ruhrgas Oranje-Nassau Dana	Consort Premier Korean PCD Marubeni DNO Tullow EnCana Venture	Tuscan Energy Africa Dyas First Oil
4th Tier <10 mmboe 35 companies 0.50%	Cieco RWE Cairn Summit ATP Svenska Bow Valley CalEnergy Euroil	*Pentex* *Anadarko* *Atlantic* *Celtic Resources* *Challenger* *Croft* *Denerco* *Dong* *EO&G*	*Eclipse* *Egdon* *Fishermens* *Halliburton* *Maersk* *MND* *Montrose* *Mustang* *NIOC*	*OilExCo* *Palace* *PDA* *Warwick* *Westoil*

85.5% → 64.0%

14.0% → 34.4%

0.5% → 1.6%

2011: 127 companies

Tier 1 >1000mmboe 0 companies				
Tier 2B 200-1000mmboe [illegible]panies	BP BG Eni	Total ExxonMobil	Shell Talisman	ConocoPhillips Nexen
Tier 3 10 - 200 mmboe 34 companies	Apache Centrica Chevron Suncor Maersk Hess CNR TAQA Bratani Dana	Marathon E.On Ruhrgas GDF SUEZ DONG Dyas Perenco EnQuest Premier Statoil	OMV RWE Murphy IOC BHP Tullow Endeavour Nippon Marubeni	SSE Fairfield Noble Summit Wintershall Valiant First Oil
Tier 4 <10mmboe 29 companies	Ithaca Idemitsu Bayerngas Sojitz Korean National Oil Co EDF Noreco Cieco	Carrizo Aurora Gazprom Bridge Energy Mitsubishi EWE Faroe Roc Oil	Gas-Union Atlantic Zeus ATP Challenger Egdon EOG Caithness	CalEnergy North Sea Energy Reach Euroil Energy Resource
Tier 5 No developed reserves 45 companies	*Volantis* *Sterling* *EnCore* *Sorgenia* *Nautical* *MPX* *Rocksource* *Agora* *Trap* *Antrim* *Hurricane* *Serica*	*Aimwell* *Sendero* *Canamens* *Sagex* *Cirrus* *AWE* *Canadian Overseas* *Celtic* *DEO* *Elixir* *Hansa* *Sussex Energy*	*Veritas* *GB* *Igas* *Iona* *KazMunaiGaz* *PA Resources* *Xcite* *AFEX* *Bharat* *Bridge Resources* *Chrysaor* *DNO*	*Ebor* *Holywell* *Tata* *Delek* *Inpex* *KUFPEC* *MOST* *Providence* *Spyker* *Westoil*
Tier 6 Promote 12 companies	*GTO* *Deliverit* *Coots*	*Echo* *Geopartners* *Two Seas*	*Mahona* *SEQ* *Spec Partners*	*Target Geodata* *Stelinmatvic* *Swift*

The assets have changed hands, but the hubs haven't

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OIL & GAS MODEL

	2010	2011	forecast LOW	forecast MEDIUM
oil price $ per bbl	79	85	70	85
gas price p per therm	40	50	35	50
Expln wells	26	13	8	20
Appraisal wells	20	16	12	22
CT + SCT	50%	62%	62%	62%

- 53 gas hubs and 54 oil hubs
- Prospects, discoveries, NTDs and fields are subjected to commercial evaluation
- E&A component is subject to a drilling algorithm to simulate activity to 2050

Prospects; Discoveries
+ Near Term Developments NTDs:-

1. Dpi < 0.3 discarded as non-viable
2. Sort order for drilling both oil & gas determined by DPI (profitability)

Hubs

1. tagged to nearest field hub / main pipeline export route
2. > 25km from field hub discarded
3. Stoppage related to commerciality of host field

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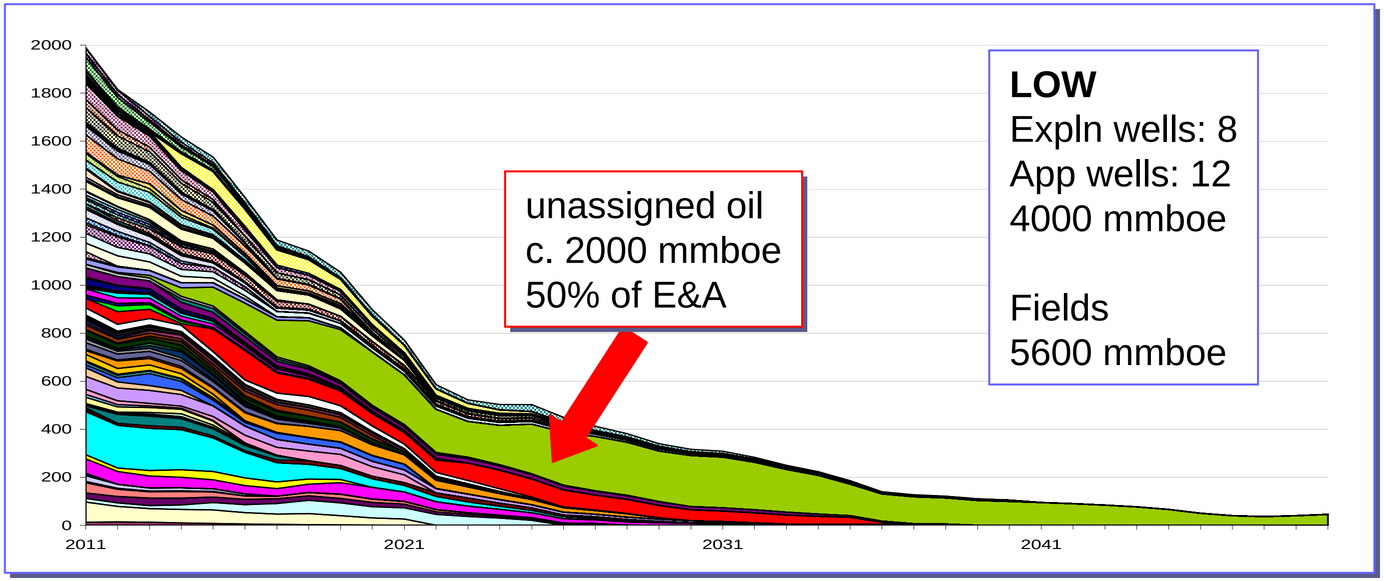
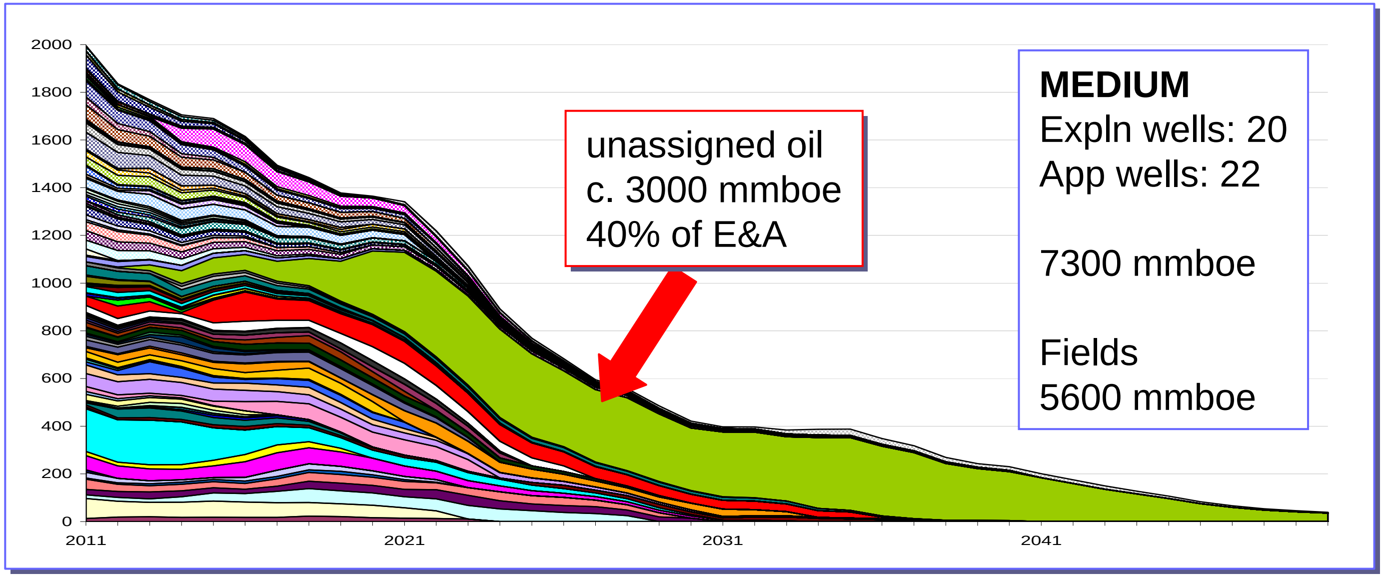
PRODUCTION FORECASTS: 9600 to 12900 mmboe





2011 E&A well count is c. 30 wells.

LOW to MEDIUM range of 9600 to 12900 mmboe

- risked recoverable

HUB ANALYSIS

……. the throughput in each oil and gas hub: 107 hubs

in the YEAR 2020. Hubs that are “zero” or near zero are identified and plotted against those hubs that are still commercially active.

A 25km hub capture radius has been used to amplify the gap potential developing in different sectors of the UKCS.

Hubs might reach 45 kms, but this may not be the norm.

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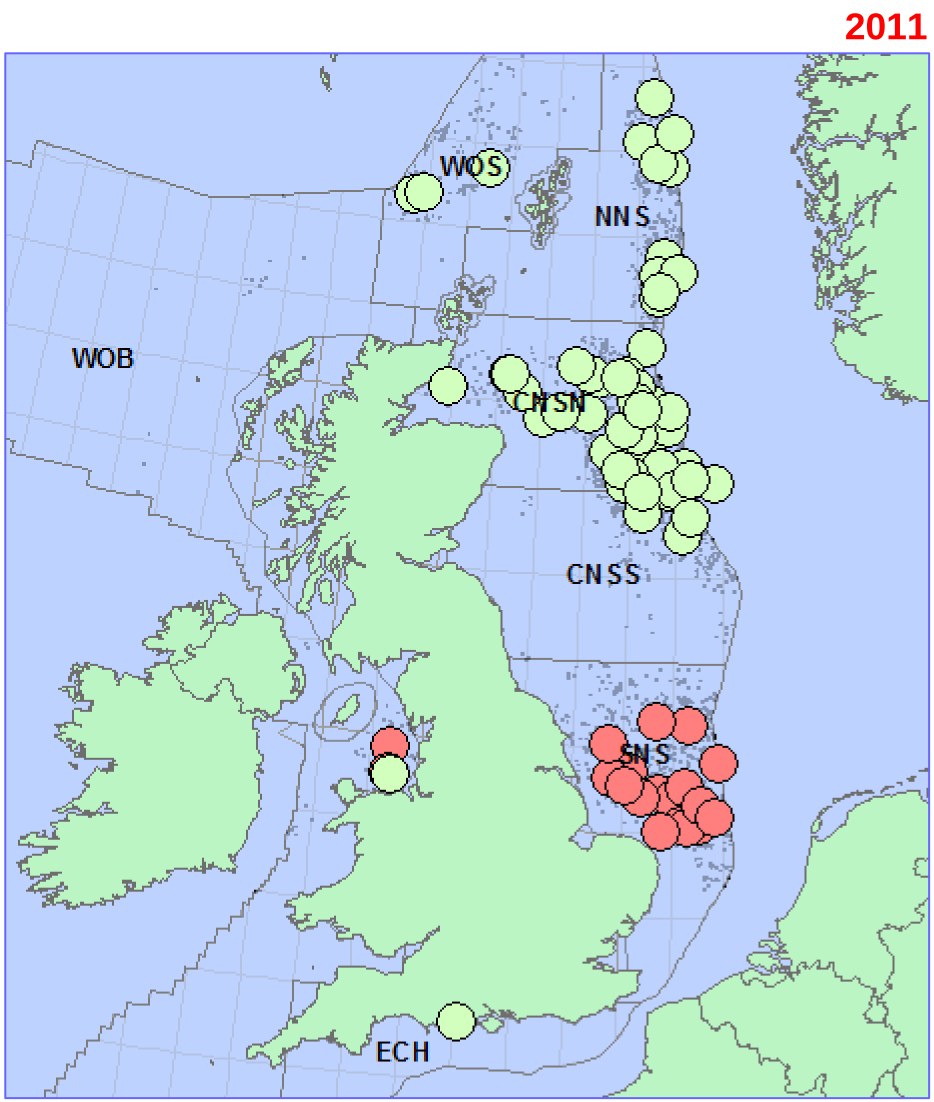
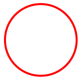
2011 – HUBS, 25 km



Most of the North Sea potential E&A resource could be reached today either through a 25km sweep in hub coverage (as shown here), plus extended sweeps of c. 45 km (technically feasible).



45 km sweep – to scale

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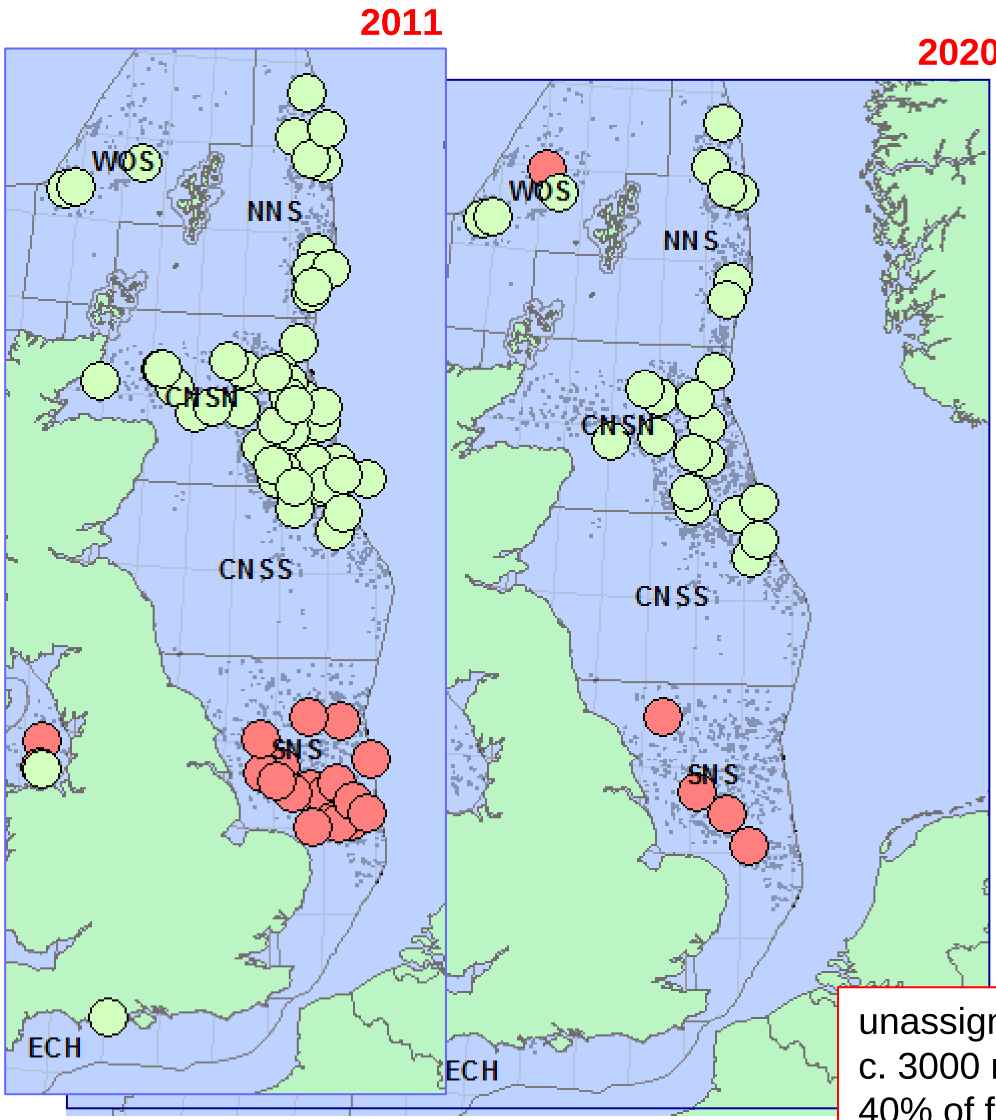
2020 – HUBS based on MEDIUM FORECAST & 25 km reach



unassigned oil
c. 3000 mmboe
40% of future resource

But by 2020, the areal coverage of “live” hubs appears to shrink to less than 50% of the area containing prospects or discoveries.

Some 3000 mmboe would remain “unassigned” to hubs and would require either standalone development or extended hub sweep.

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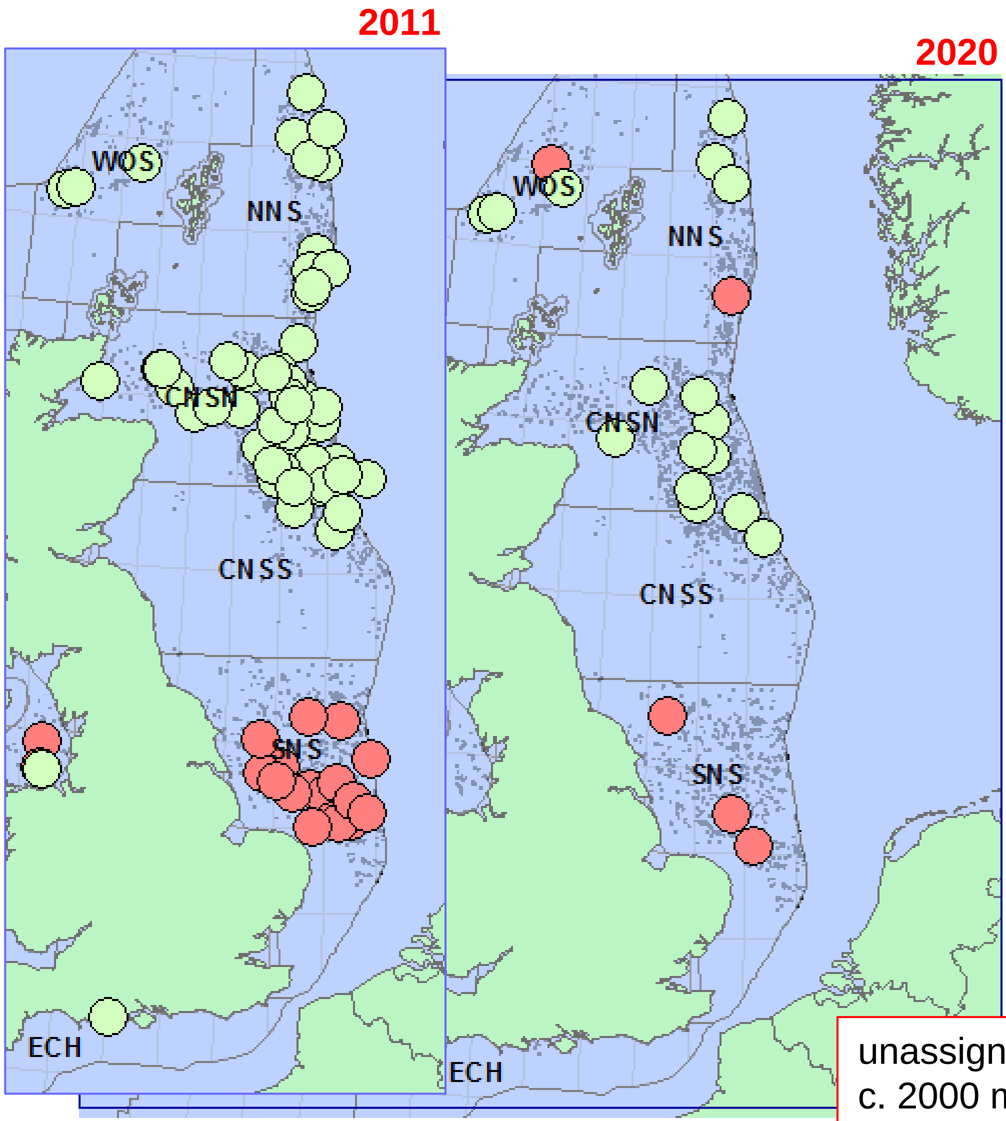
2020 – HUBS based on LOW FORECAST & 25 km reach



unassigned oil
c. 2000 mmboe
50% of future resource

"live" hub coverage is more dependent on in-field drilling than E&A.

The reduction in "live" hubs is mainly insensitive to E&A activity, although overall recovery is, as usual, a function of E&A activity.

Gas Basin hubs are depleted; Morecambe Bay hubs are gone; Outer Moray Firth hubs are gone.

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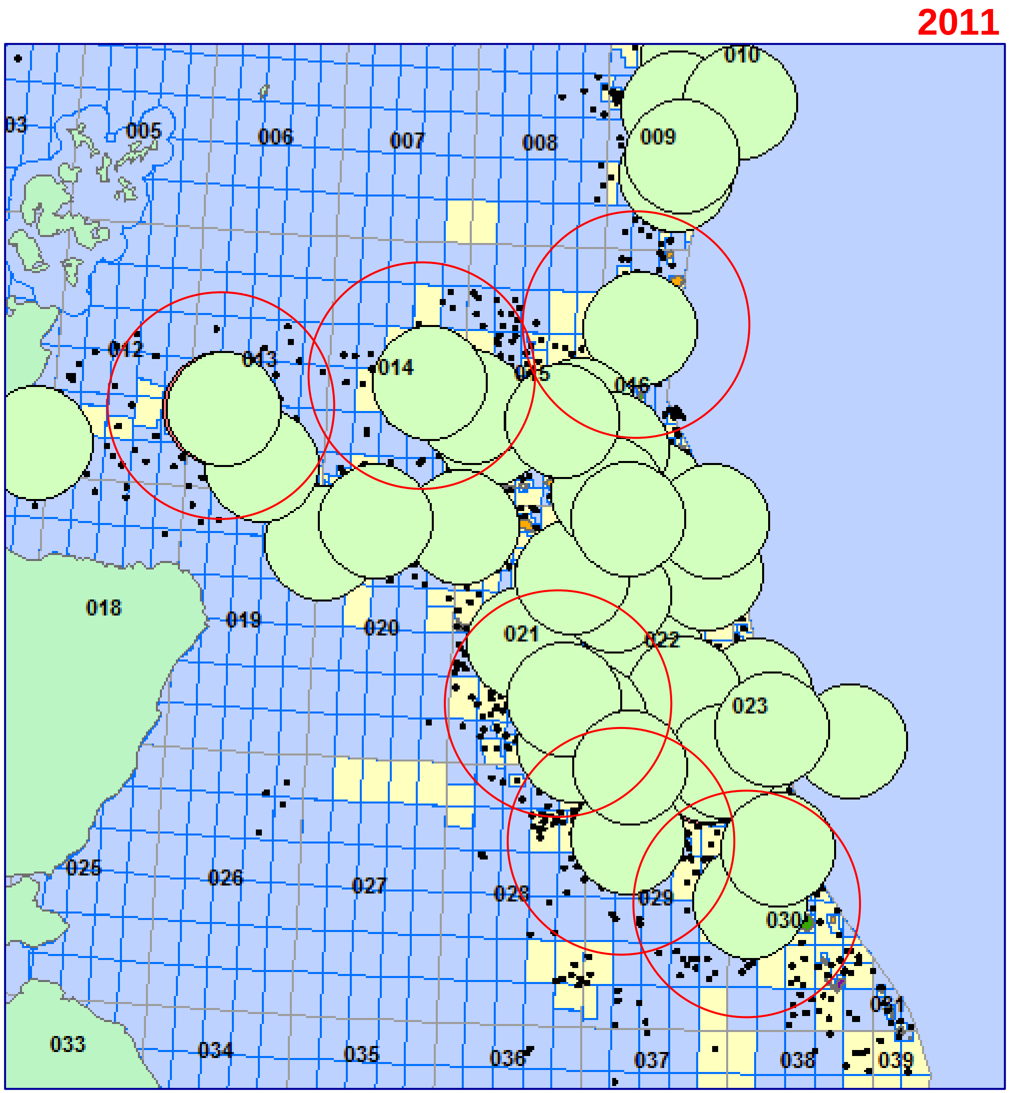
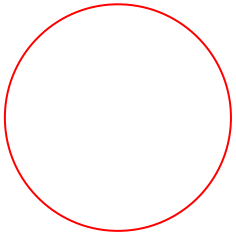
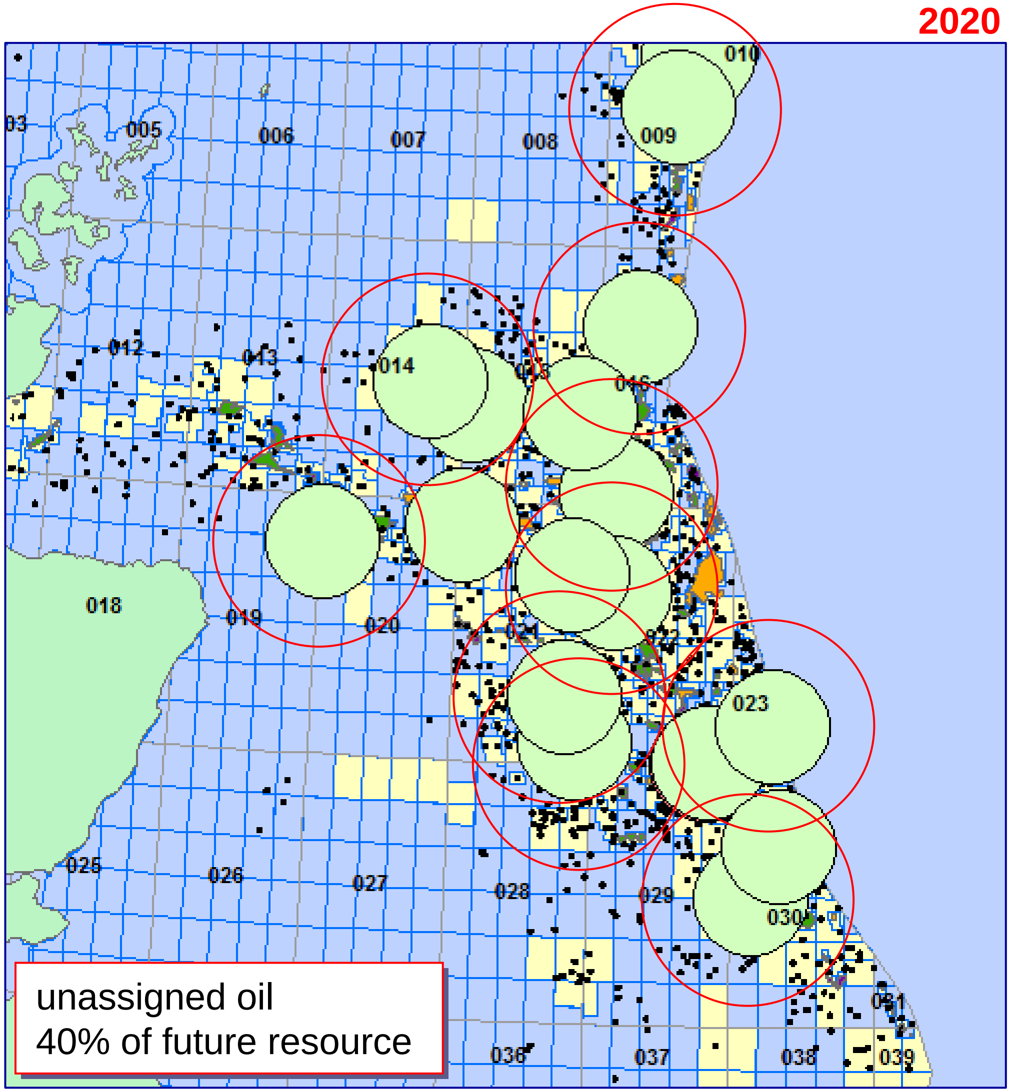
2011 – HUBS CENTRAL NORTH SEA & 25 km reach



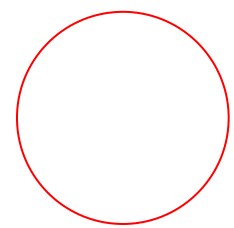
Most of the Central North Sea potential E&A resource could be reached today either through a 25km sweep in hub coverage (as shown here), or through extended sweeps of c. 45 km (technically feasible).



2020 – HUBS CENTRAL NORTH SEA; MEDIUM CASE & 25 km reach



But in 2020, access to “live” hub coverage throughout the CNS would require 45 km reach as the norm rather than 25 km.



45 km sweep
– to scale

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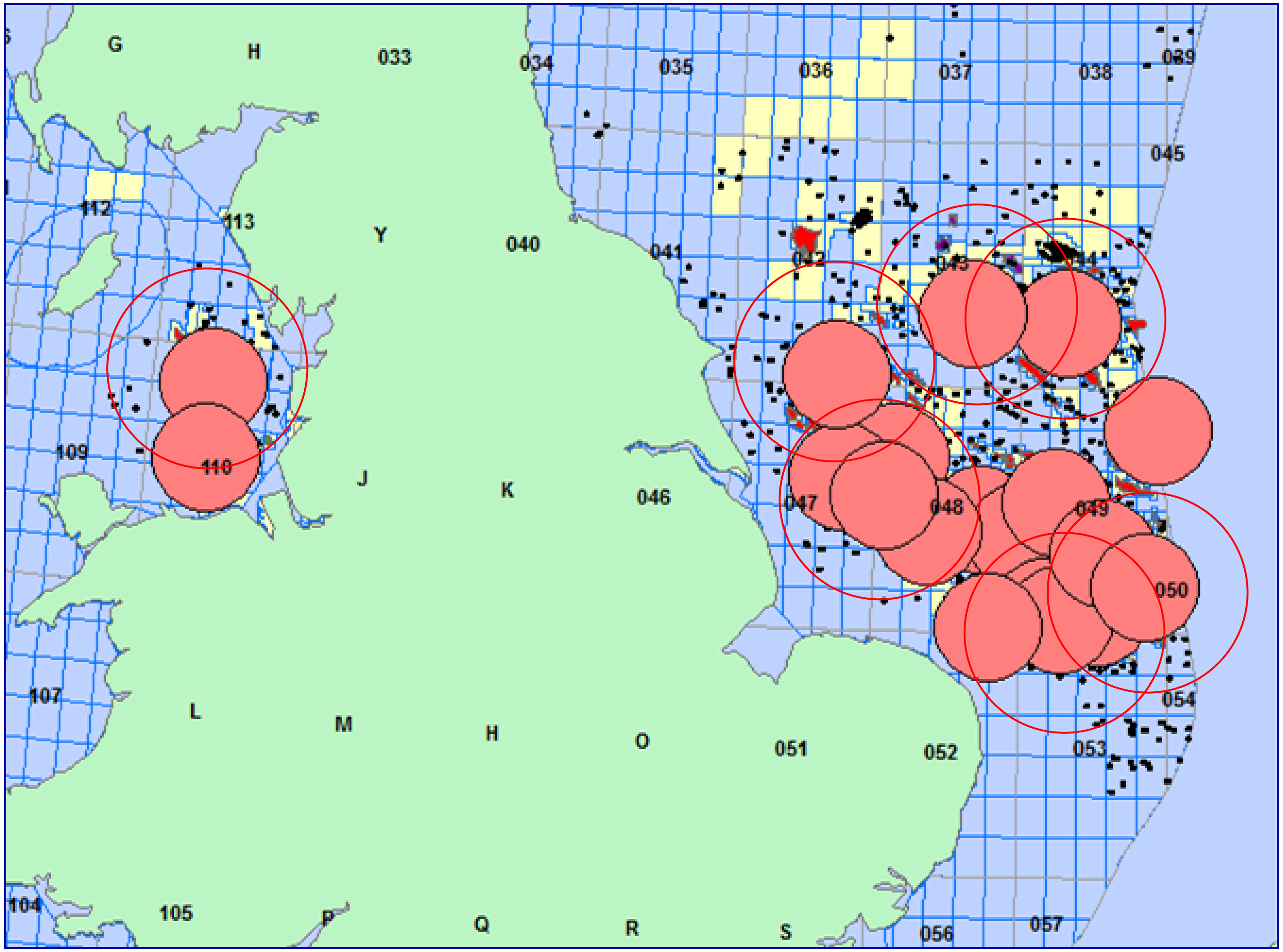
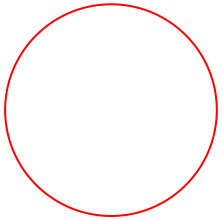
2011 – HUBS: GAS BASIN & MORECAMBE BAY & 25 km reach

2011



Most Gas Basin resource could be reached today either through a 25km sweep in hub coverage (as shown here), plus extended sweeps of c. 45 km (technically feasible).



45 km sweep
– to scale

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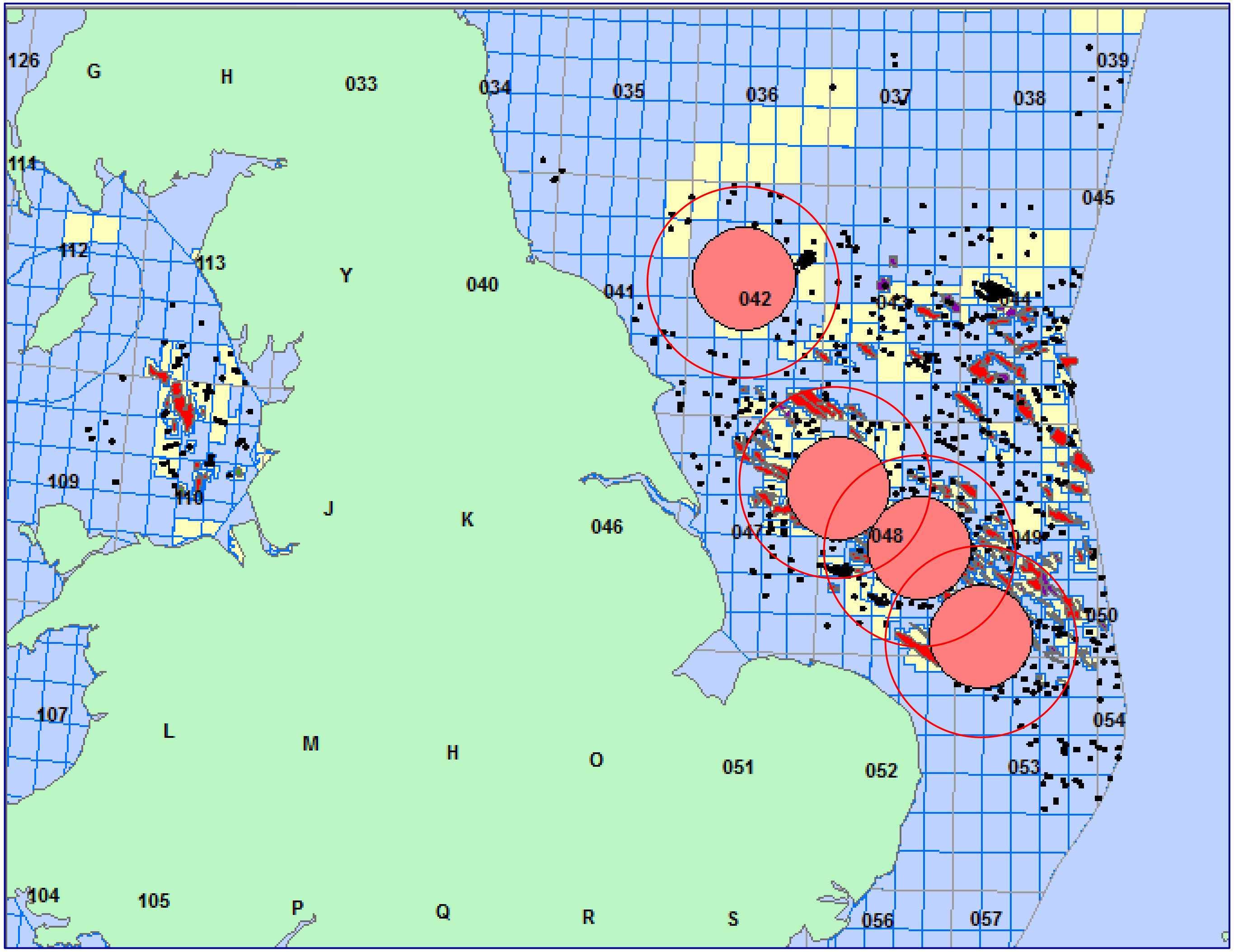
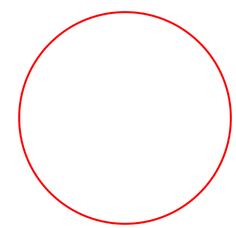
2020 – HUBS: GAS BASIN & MORECAMBE BAY; MEDIUM CASE & 25 km reach

2020



But, in 2020, even 25k to 45 km reach would not provide full Gas Basin cover



45 km sweep – to scale

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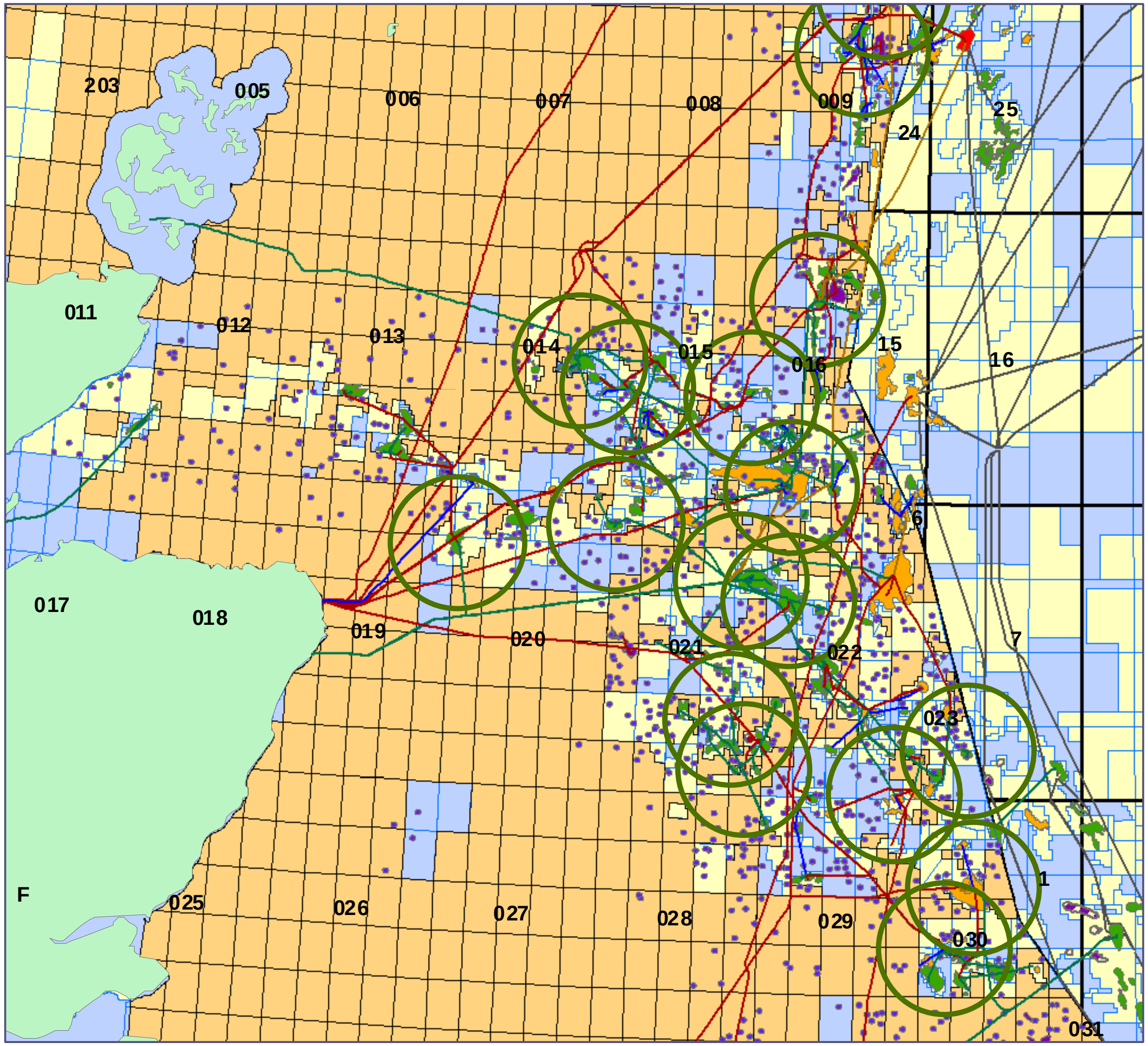
HUB ANALYSIS EXAMPLE: 26^{TH} LICENCE ROUND v 2020 HUBS



Which 26^{th} Round prospects and discoveries offered most export options as we head towards 2020?

26^{th} Licence Round

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CONCLUSIONS

1. Major decrease in E&A on the UKCS in 2011
2. While in Norway, E&A levels increased.
3. Our tax regime is not competitive.
4. Our overall potential loss in reserves = 7 billion boe
5. Industry is trying to change government attitude

    1. The hub/pipeline export system does not appear so sensitive to E&A activity
    2. Gaps could open up in the OMF, the CNS, and large swathes of the Gas Basin.
    3. Estimate 40-50% E&A at risk: 3 billion boe
    4. Requires a different approach centred on costs, collaboration, ownership …. maybe tax or some other intervention

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