



Digital Dividend Review

A PMSE Forum

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JFMFG Ltd

26 January 2007

Programme



- Introduction 10.30
- Spectrum Terminology
- Overview of Ofcoms Proposals 10.40
- **Five Key Issues** (+ Discussion) 10.45
- **Our Proposal** (+ Discussion) 12.00
- Lunch (Informal Discussion) 12.30

Introduction

Aims and Objectives

In today's event we aim to:

- Ensure that key players are fully informed of Ofcom's proposals
- Identify and debate key issues before Ofcom's meeting for Stakeholders
- Give industry a head-start in preparing individual responses to the consultation

Our interest in Digital Dividend Review

- We are a private company, independent of Ofcom
- Owned by programme makers and established to support programme makers
- Wholly dependent on the current outsourcing contract with Ofcom
- Successfully supported programme makers since 1997
- Have specialist expertise that risks being dissipated
- Coordination of professional wireless in this spectrum is a significant activity for the business

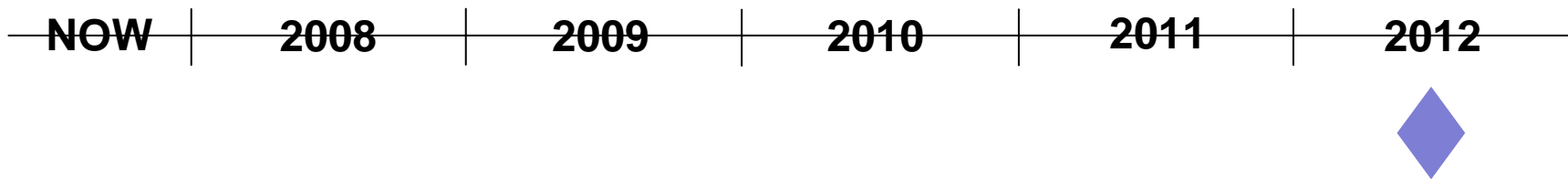
Your interest in the Digital Dividend Review?

The “Do nothing” scenario

21	22	23	24	25	26	27	28	29	30	31	32
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758-766	766-774	744-782	782-790	790-798	798-806	806-814	814-822	822-830	830-838	838-846	846-854

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854-862

Outside London:



Digital Dividend Review Terminology

What is:

- Available Spectrum?
- Cleared Spectrum?
- Digital Interleaved Spectrum?
- Analogue Interleaved Spectrum?

Digital Dividend Review Terminology

Available Spectrum

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Digital Dividend Review Terminology

Cleared Spectrum

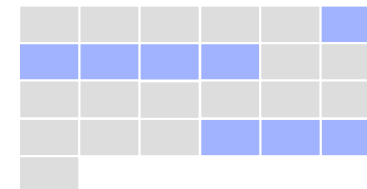
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Digital Dividend Review Terminology

Digital Interleaved Spectrum

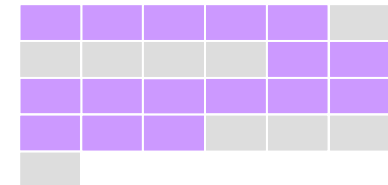
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Digital Dividend Review Terminology

Other Spectrum

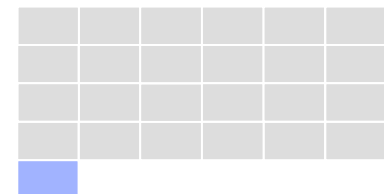
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Digital Dividend Review Terminology

Analogue Interleaved Spectrum

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Overview of Ofcom's proposals

Overview of Ofcom's proposals

Timetable

- Consultation published - 19 December 2006
- JFMG Forum on the DDR - 26 January
- Ofcom meeting for Stakeholders - 13 February
- Consultation closes - 20 March

Overview of Ofcom's proposals

Channel 69

- Low power use only
- Licence-exempt for existing un-coordinated use
- Coordinated use moves to alternative spectrum or is partitioned within channel 69

Overview of Ofcom's proposals

Cleared Spectrum

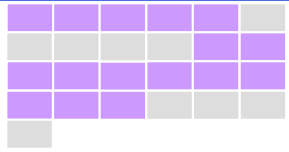
- Clear channels 31 – 40 and 63 – 68 of PMSE use on a region by region basis – Digital Switchover Plan
- To auction spectrum licences by end 2008

Overview of Ofcom's proposals

Packaging for auction

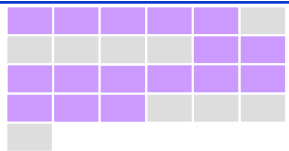
Six options for cleared spectrum:

1. 1 lot (1x 120MHz)
2. 3 lots (1x 56MHz; 1x 16MHz; 1x 48MHz)
3. 4 lots (1x 32MHz; 1x 24MHz; 1x 16MHz; 1x 48MHz)
4. 4 lots (1 x 24MHz paired; 1x 32MHz; 1x 16MHz; 1x 24MHz)
5. 5 lots (3x 24MHz; 1x 16MHz; 1x 32MHz)
6. 15 lots (15x 8MHz)



Overview of Ofcom's proposals Digital Interleaved Spectrum

- To package digital interleaved spectrum so that both PMSE and Local TV users can bid at auction.
- Auction at end 2008
- Enable PMSE use until at least 2012.



Overview of Ofcom's proposals

Packaging for auction – Option 1

Local: 50-100 lots

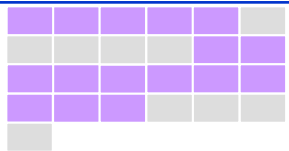
UK Wide: 1 lot (256MHz)

21	22	23	24	25	26	27	28	29	30
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Overview of Ofcom's proposals

Packaging for auction – Option 2

Local: 50-100 lots

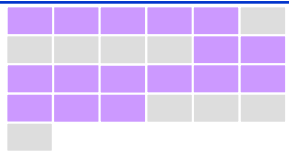
UK Wide: 2 lots (1x 80MHz and 1x 176MHz)

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Overview of Ofcom's proposals

Packaging for auction – Option 3

Local: 50-100 lots

UK Wide: 3 lots (e.g. 2x 88MHz and 1x 80MHz)

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Overview of Ofcom's proposals




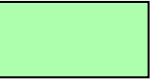

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-  Cleared Spectrum –auctioned in 2008 but cleared of PMSE to DSO timetable
-  To be cleared of PMSE and airport radar use and auctioned at end of 2008
-  Assigned to Digital TV but interleaved auctioned at end 2008. PMSE use guaranteed until at least 2012
-  Used for PMSE and radio astronomy – no change
-  Channel 69 to become licence exempt

Five Key Issues

Key Issue 1

Channel 69

Current Partitioning						
Licence Type	Use	Power	Quality of Service	Allocated Spectrum (MHz)	% of Channel 69	
Annual UK Wide	Wireless Mics/ Monitors	Low	Uncoordinated	2.8MHz	35%	
Annual Fixed Site Or Temp	Wireless Mics/ Monitors and Audio Links*	Low/High	Coordinated	3.85MHz	48%	
Temp only	Audio Links* only	High	Coordinated	1.35MHz	17%	
				Total	8MHz	100%

* Studio to transmitter links, portable links

Channel 69

Key Issue 1

Ofcom's proposed "No Licence" regime

Pro's	Con's
<p>It's free for users</p> <p>No administration costs for regulator</p> <p>No barrier to sales for manufacturers</p> <p>Increased sales volume for manufacturers may reduce equipment costs to users</p> <p>Reflects widespread unlicensed use</p>	<p>Open to all-comers without priority including professional, amateur and consumer alike</p> <p>Potential influx of technically and operationally similar consumer applications – "thin edge of the wedge"</p> <p>No defined security of tenure as there is with paid-for spectrum</p> <p>Increased use may increase risk of interference</p> <p>Loss of coordinated channels means a greater risk if interference at major events</p> <p>Licensed users have priority for interference resolution</p> <p>More likely to be used as convenient test-bed spectrum by emerging (non-PMSE) technologies</p> <p>Inconsistent with regime for VHF shared frequencies</p>

Key Issue 1

Channel 69

Some Possible Models			
Model	Description	Likelihood	Comments/Notes
Current	Ofcom pays costs of management and collects fees via contractor	Unlikely	
Ofcom In-house licensing	Like Amateur/Maritime model, (i.e. free if on-line)	More likely	Devalued? Unwanted cost to Ofcom. How to coordinate 65% of Spectrum?
Industry Owned	Spectrum rights gifted to users. Users must pay annual rental as incentive for efficient management	Possible	Like Business radio model. Will cost more. (i.e. Rent + Management costs)
Exemption	No licence, no management	Likely	Ofcom proposal

Key Issue 1

Channel 69 – Discussion

Q1. How feasible is partitioning ch69? Are users disciplined in observing allocated spectrum?

Q2. Would increased costs be likely to increase free-rider problem?

Q3. Would industry need to shift from current 'end-user pays' model to fund annual rental cost?

Q4. Would industry ownership encourage self-policing at production?

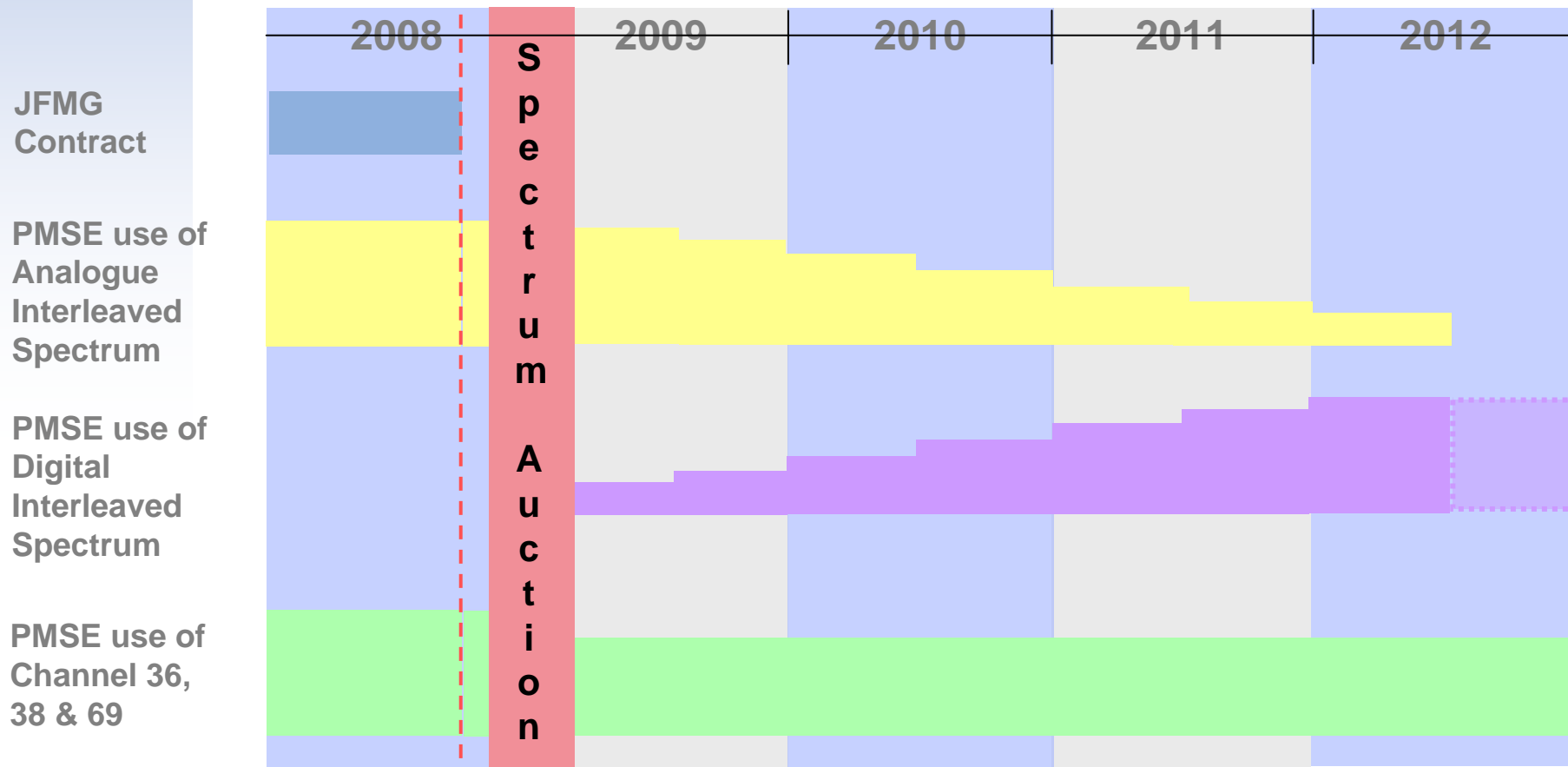
End by:



11.00

Key Issue 2 Timing & Transition

Spectrum Management



Key Issue 2

Timing & Transition – Questions

Q1. Outside London, users are facing the expense of a temporary migration out of Cleared Spectrum. Should PMSE use of Cleared Spectrum also be protected to 2012?

Q2. Does the award in 2008 give PMSE a realistic opportunity to coordinate a bid?

Q3. Would the lack of continuity in PMSE spectrum management arrangements in 4Q 2008 further disadvantage coordination of a bid?

End by:



11.15

Key Issue 3

Auction or Intervention?

Auction? Coordinating a bid

In 2006:

- There were 600 licensed users of Analogue Interleaved Spectrum
- There were 32,000 frequency assignments
- Top 20 users account for 50% of use
- Top 20 users include:
Sound hire; outside broadcast facilities;
- Top 100 users account for 80% of use

Key Issue 3

Auction or Intervention?

Intervention? Tradable rights gifted to PMSE:

- “Gifted” does not mean “Free”
- Must pay annual rent to Ofcom
- Rent set to encourage efficient use
- Rent is difficult to establish – auction avoids the problem of establishing market value.
- Lifetime rent costs could exceed auction value
- Who would own the rights?

Key Issue 3

Auction or Intervention? – Discussion

Q1. How could key players aggregate demand and launch an industry bid?

Q2. How could competing companies and conflicting interests be resolved?

Q3. How could the interests of numerous smaller players be catered for?

Q4. Would industry prefer auction or intervention?

End by:



11.30



Key Issue 4

Constraints

Channel 38

- Currently available for wireless microphones
- Restricted to protect radio astronomy but...
- Available in London
- Continued use feasible but not addressed in Digital Dividend Review

Key Issue 4

Constraints

Adjacent Band Interference

- Wireless Mics vulnerable to interference from new services (especially 'mobile phones') operating in neighbouring Cleared Spectrum

Key Issue 4

Constraints

Digital Self-Help Relays

- Current arrangement gives priority to PMSE over (analogue) self-help TV relays

Key Issue 4

Constraints - Discussion

Q1. How should Ofcom provide for PMSE to continue to access Ch 38?

Q2. How can the risk of interference to PMSE use from new services in Cleared Spectrum be mitigated?

Q3. How should Ofcom prioritise digital self-help relays within Digital Interleaved Spectrum?

End by:

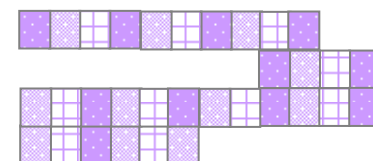
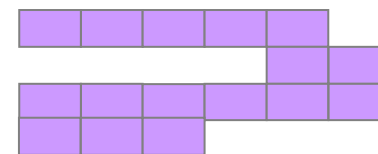


11.45

Key Issue 5 Packaging

Digital Interleaved Spectrum

- Single package is like current model (slide 20)
- Two package option unlikely to have similar geographic availability (slide 21)
- Three interwoven packages creates numerous boundary problems (slide 23)
- Local TV lots may also be usable for PMSE
- No detailed information about the actual capacity of interleaved spectrum





Key Issue 5

Packaging

Cleared Spectrum

- 16 MHz slot (Ch39-40) good target for PMSE
- Some options provide opportunity for Ch66-68
- Possibility for individual lots of 8MHz

Key Issue 5

Packaging - Discussion

- Q1. How can packaging options be evaluated without more knowledge of the capacity of Digital Interleaved Spectrum?
- Q2. How might the additional complexity of multiple lots of Digital Interleaved Spectrum benefit PMSE?
- Q3. Are the packaging options for Cleared Spectrum of peripheral interest to PMSE?

End by:



12.00

A Straw Man Proposal

A straw man proposal

Our proposal aims to:

- Be compatible with Ofcom's policies
- Build on DDR proposals
- Provide medium-term stability for PMSE users
- Achieve a good long-term outcome for PMSE
- Secure continuity of PMSE spectrum management



A straw man proposal

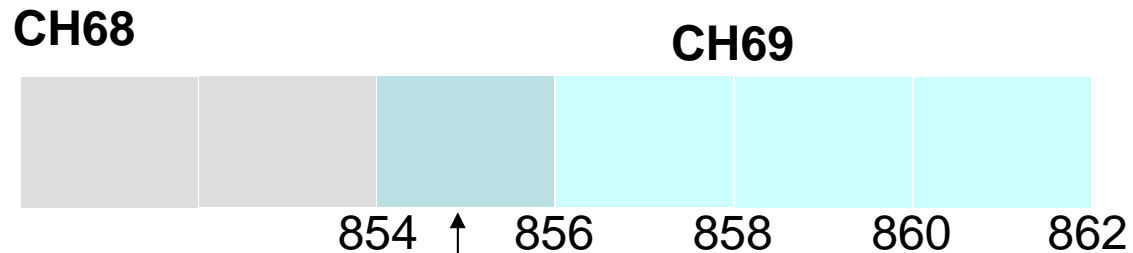
Channel 69

- Partitioned for high and low power uses
- Low power either light-licensed or exempt
- High power use requires coordination
- High power to provide a buffer between low power uses and new services in Channel 68

A straw man proposal

Channel 69 partitioning

Channel 69 partitioned spectrum



Coordinated/Licensed spectrum –
guard band to protect UK wide Ch
69 exempt use

A straw man proposal

Auctions

Support Auctions of:

- Cleared Spectrum in 2008, but with protection for use of Ch67 and 68 until 2012
- Local TV/PMSE packages within Digital Interleaved Spectrum at 2008 as proposed
- UK wide Digital Interleaved Spectrum but postponed until 2010

A straw man proposal

Spectrum Management

New Interim Band Manager to:

- Manage coordinated access to Channel 38
- Manage coordinated access to Channel 69
- Manage protected access to Channels 67 & 68 until 2012
- Manage protected access to Digital Interleaved Spectrum until 2012
- Manage Digital Switchover Migration process
- Provide stability through auction processes

A straw man proposal

Spectrum

Cleared
Spectrum

Local TV/
PMSE

Digital
Interleaved

Ch 69

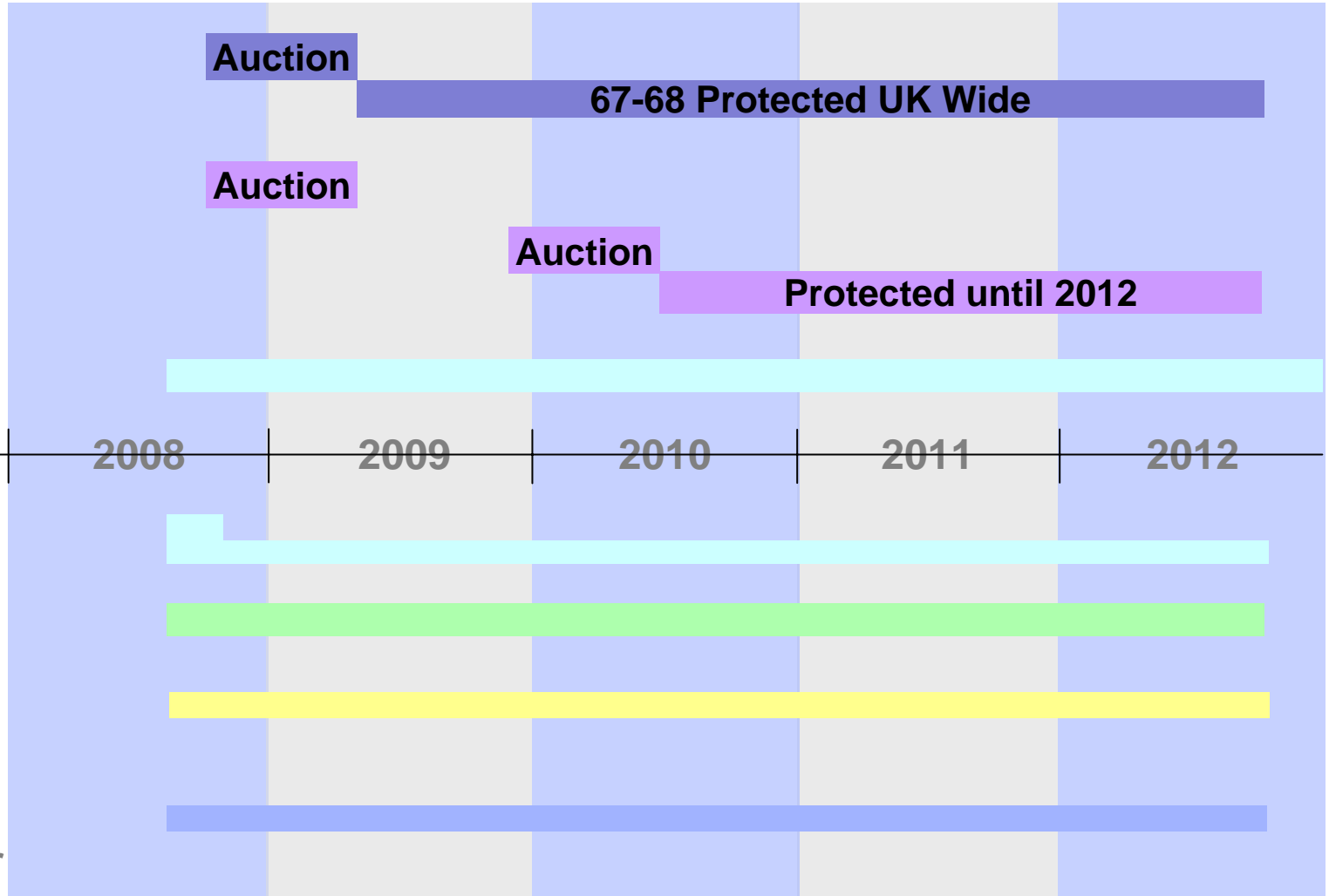
Management

Ch 69

Ch 38

PMSE
Migration for
DSO

“New interim”
Band Manager



Discussion

End by:



12.30

Review of our Aims and Objectives

We set out today to:

- Ensure that key players are fully informed of Ofcom's proposals
- Identify and debate key issues before Ofcom's meeting for PMSE stakeholders
- Give industry a head-start in preparing individual responses to the consultation



Thank you and lunch

