

# 3UK Spectrum Requirements and Impact Analysis

**SAMSUNG**  
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# Spectrum Requirements



# Spectrum Impact Analysis: Video User Capacity



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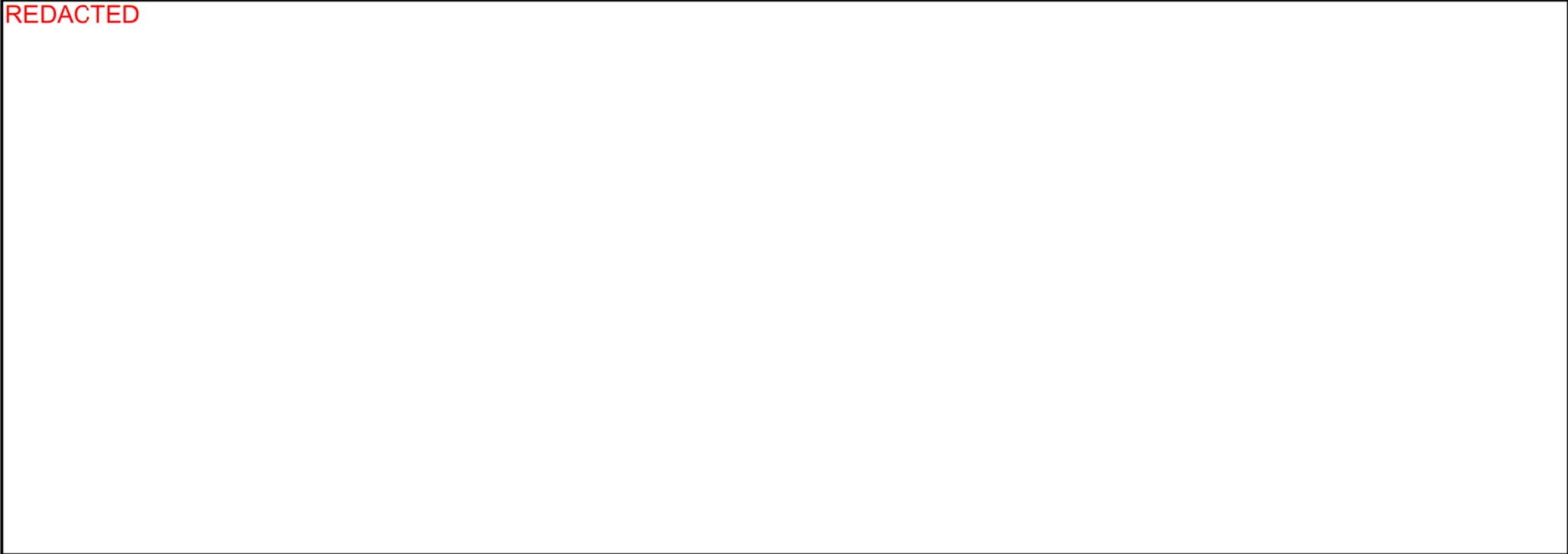
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REDACTED



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# Minimum Spectrum Requirement Analysis (1/4)

- Spectrum expansion criteria =  
EE's potential Quality of Experience (QoE) in congested sites  
i.e.



How much spectrum does 3UK need  
to provide at least the same QoE to 3's customers  
as EE can provide to EE's customers

- QoE criterion:

$$\text{Perceived Download Speed} = \frac{\text{Download File Size}}{\text{File Download Time}^*}$$

\* Download time for a single file (excluding the time between successive file downloads)

# Minimum Spectrum Requirement Analysis (2/4)

## 1 Perceived DL Speed over PRB usage graph for 3UK's traffic

- [REDACTED]

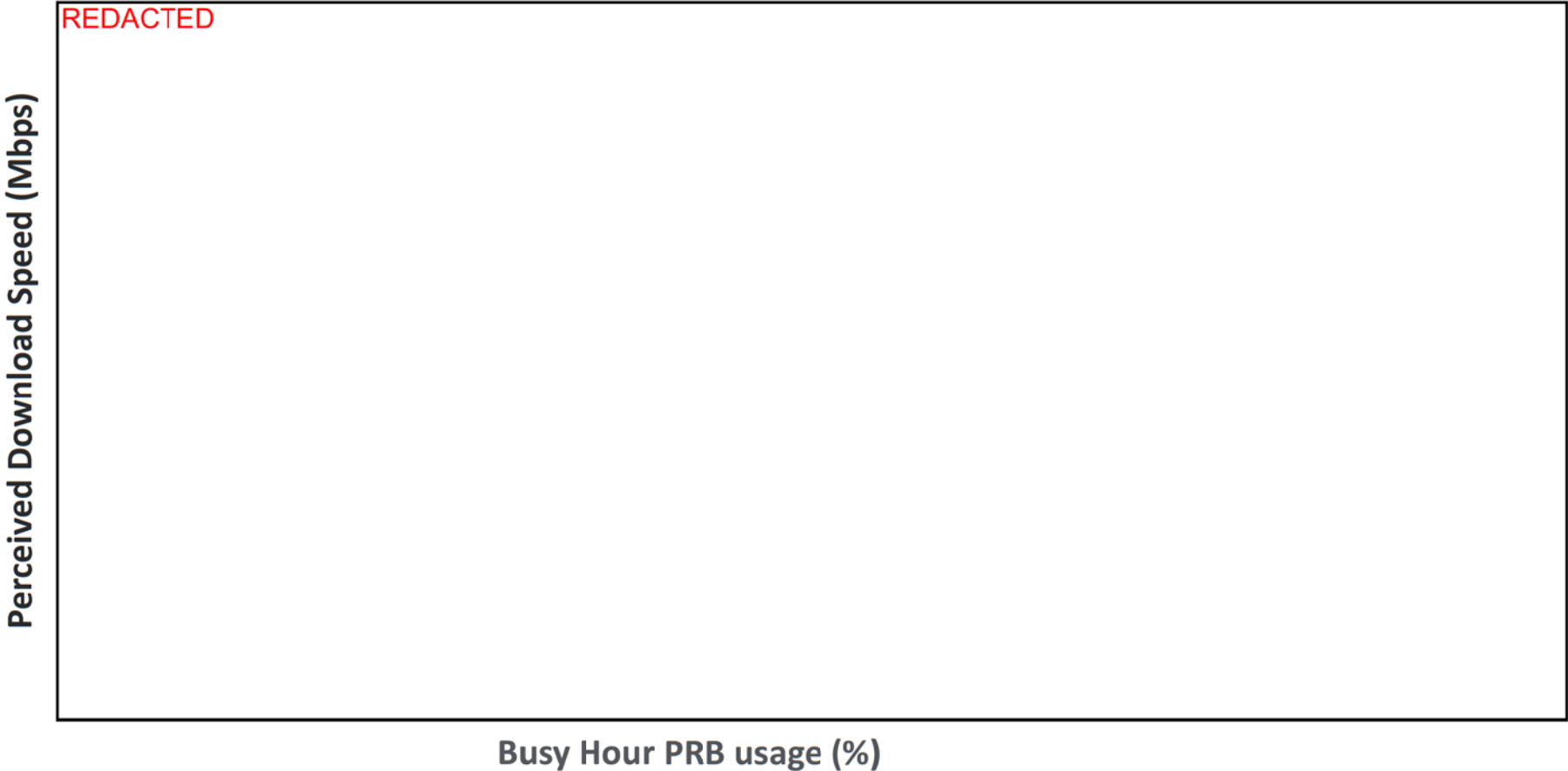


[REDACTED]

[REDACTED]

# Minimum Spectrum Requirement Analysis (3/4)

## 2 Add benchmark to graph (EE's QoE)



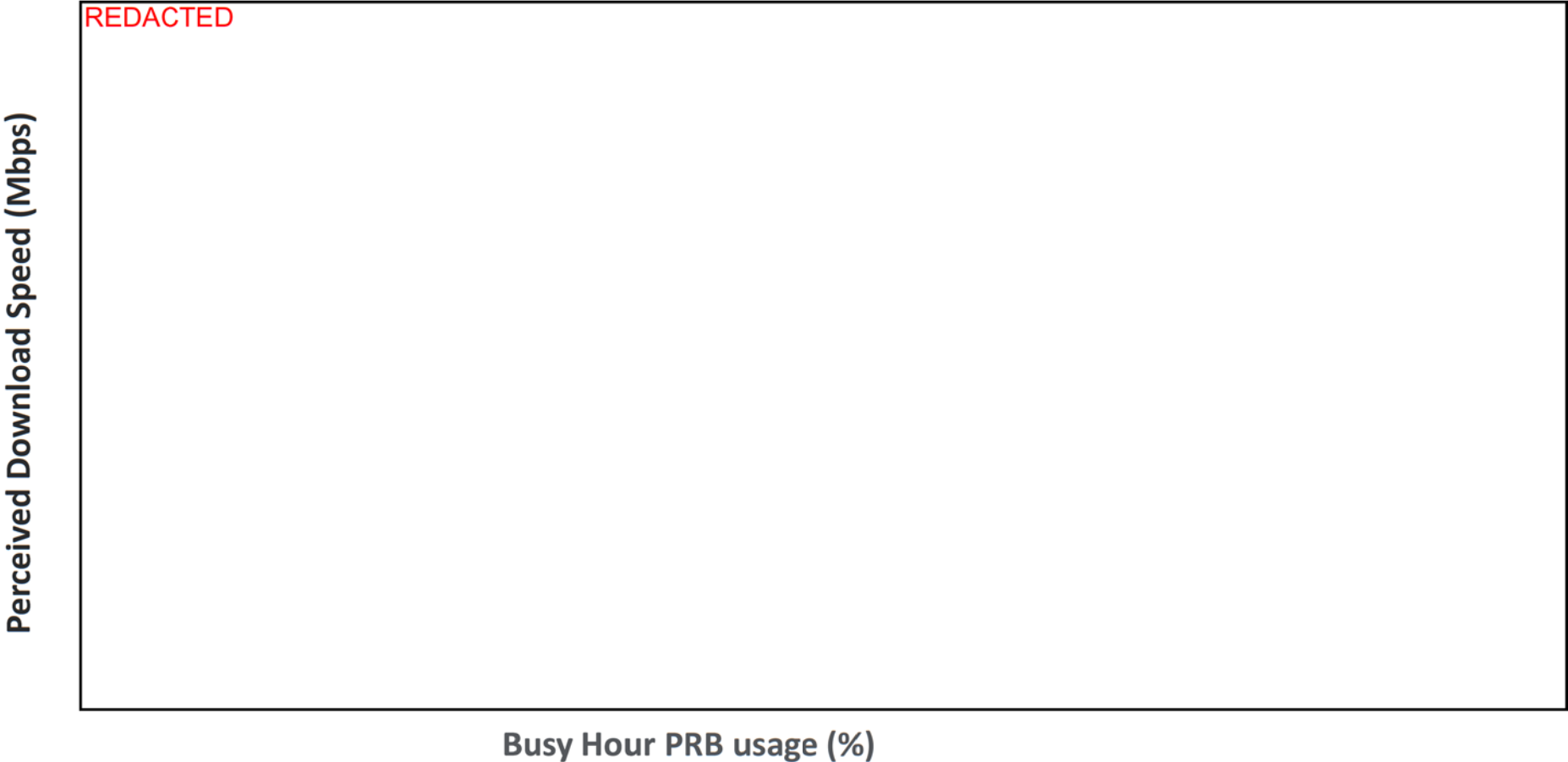
[Redacted text]

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# Minimum Spectrum Requirement Analysis (4/4)

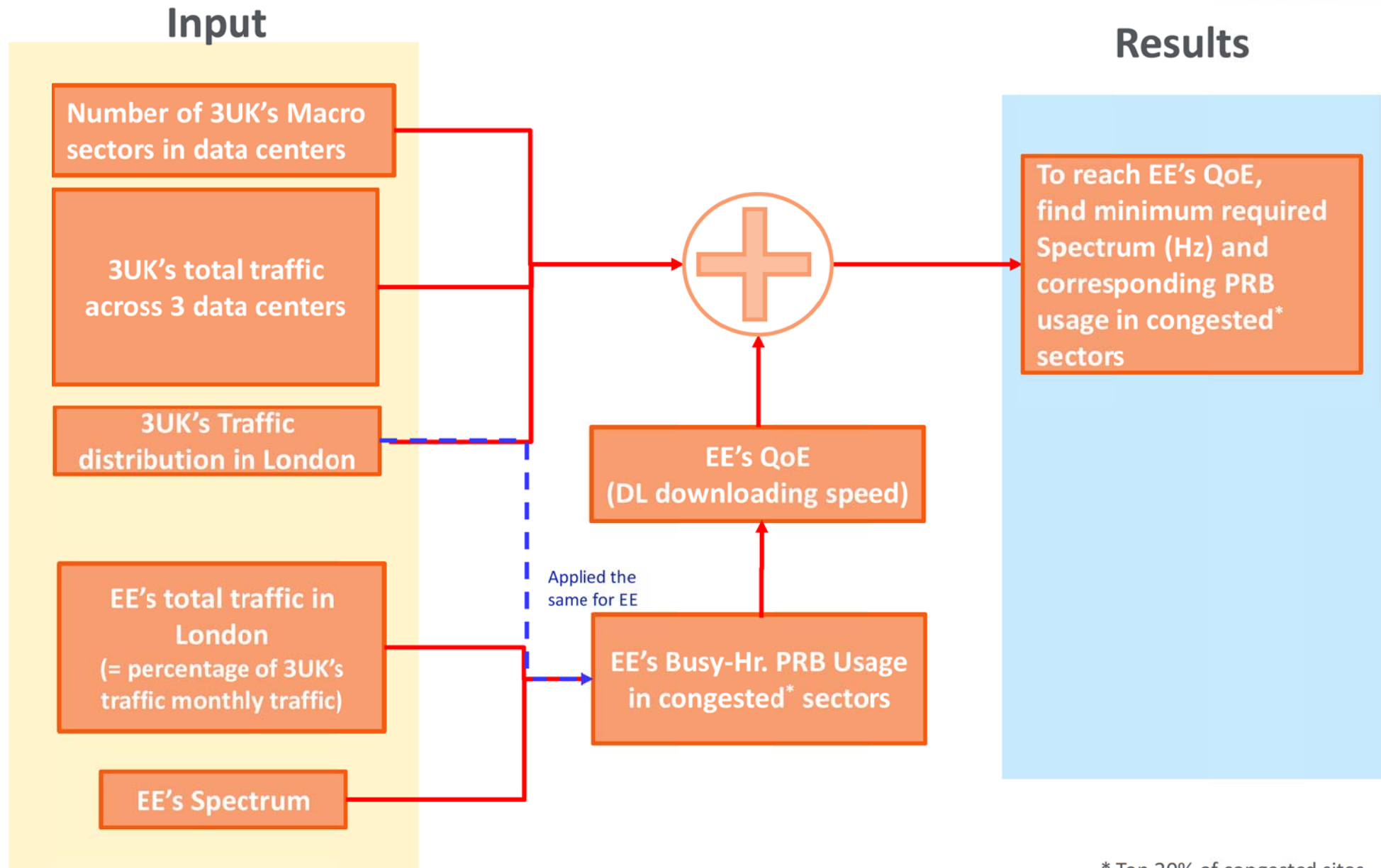
3 Find operational point with same QoE for 3UK



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[Redacted text block]

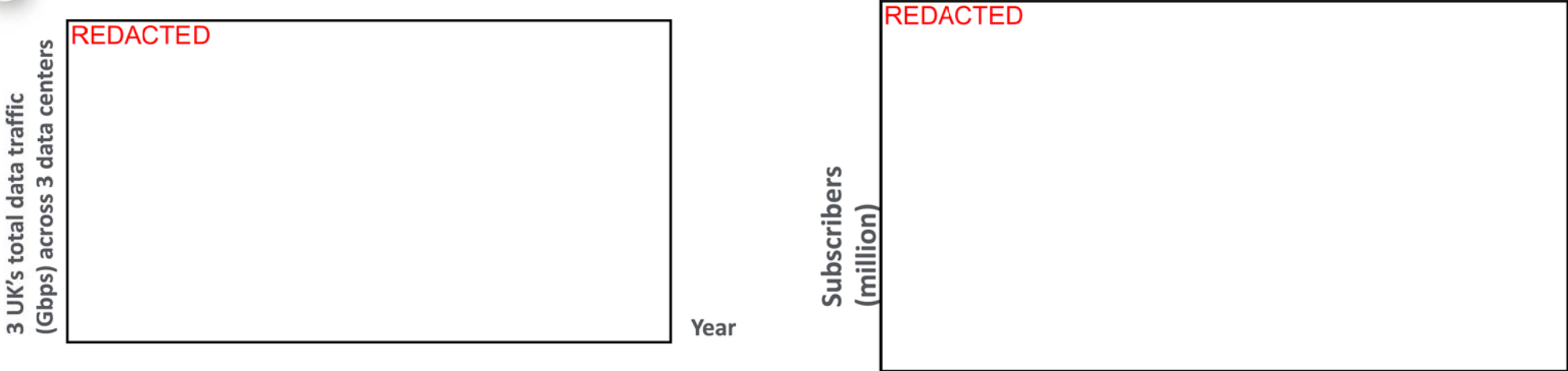
# Spectrum Forecasts – Detailed View



\* Top 20% of congested sites

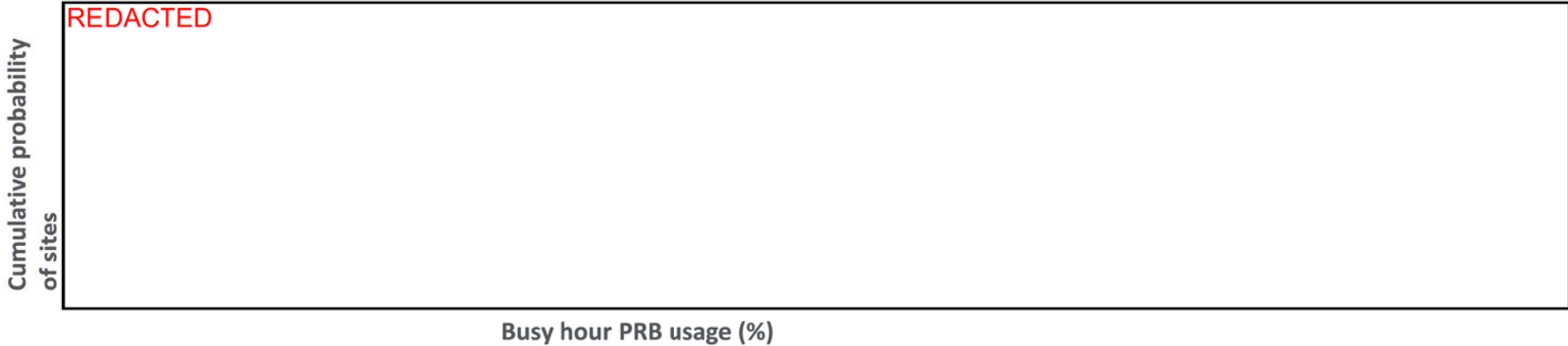
# Minimum Spectrum Requirement Analysis

## Growth in 3UK's Traffic and Connected Users\*



Reference: from 3UK

## 3UK Traffic Distribution in London

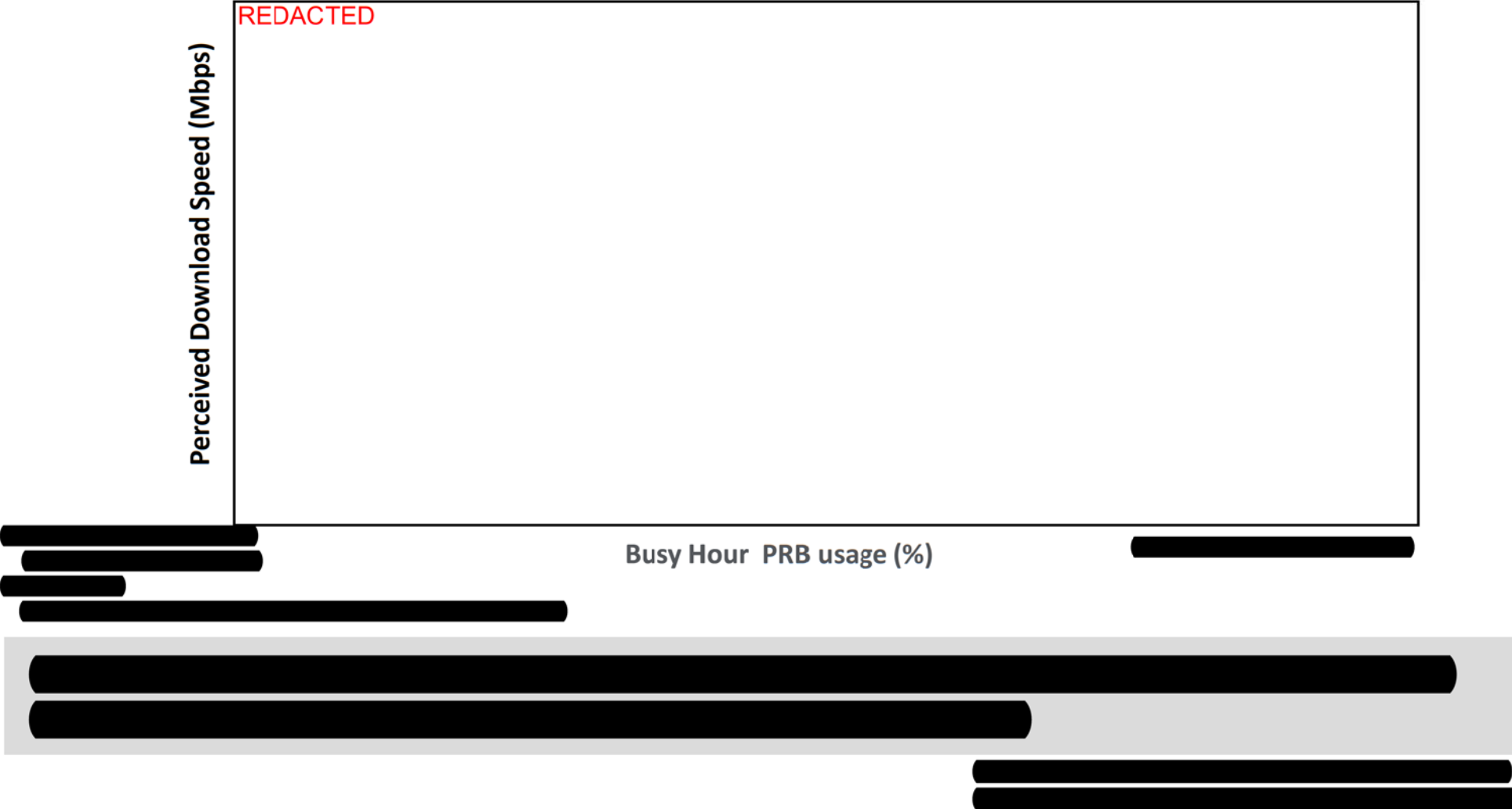


# Spectrum Forecasts – Key Input Parameters

#	Parameter	Value	Brief Explanation
●	[REDACTED]	[REDACTED]	[REDACTED]
●	[REDACTED]	[REDACTED]	[REDACTED]
●	[REDACTED]	[REDACTED]	[REDACTED]
●	[REDACTED]	[REDACTED]	[REDACTED]
●	[REDACTED]	[REDACTED]	[REDACTED]
●	[REDACTED]	[REDACTED]	[REDACTED]
●	[REDACTED]	[REDACTED]	[REDACTED]
●	[REDACTED]	[REDACTED]	[REDACTED]
●	[REDACTED]	[REDACTED]	[REDACTED]

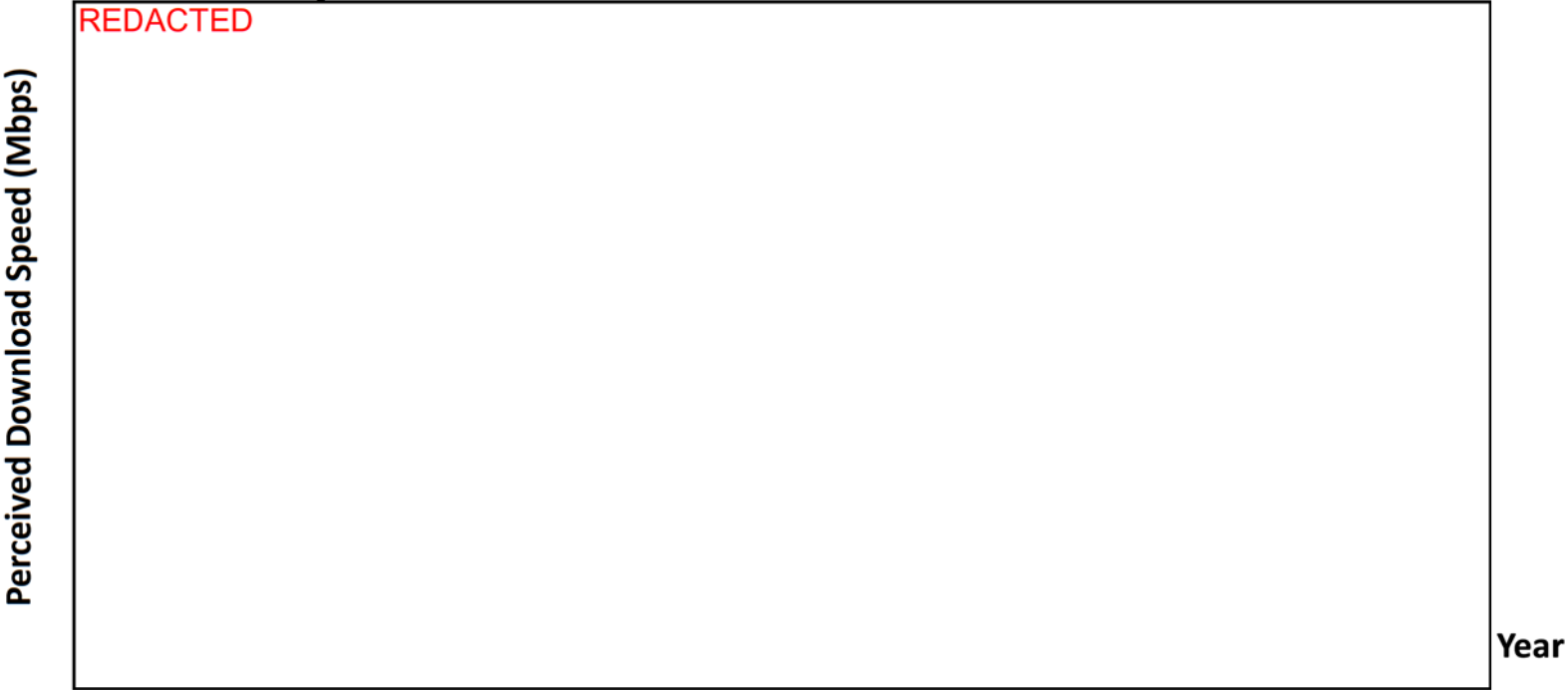
# Minimum Spectrum Requirement Analysis 2016

- Analysis based on present traffic and spectrum expansion criteria = EE's potential Quality of Experience (QoE) in congested sites



# Minimum Spectrum Requirement Analysis 2018

- Similar analysis as 2016, but with increased traffic in 2018 (forecast based on Cisco's VNI)



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Busy Hour PRB usage (%)

[Redacted text]

[Redacted text]

[Redacted text]

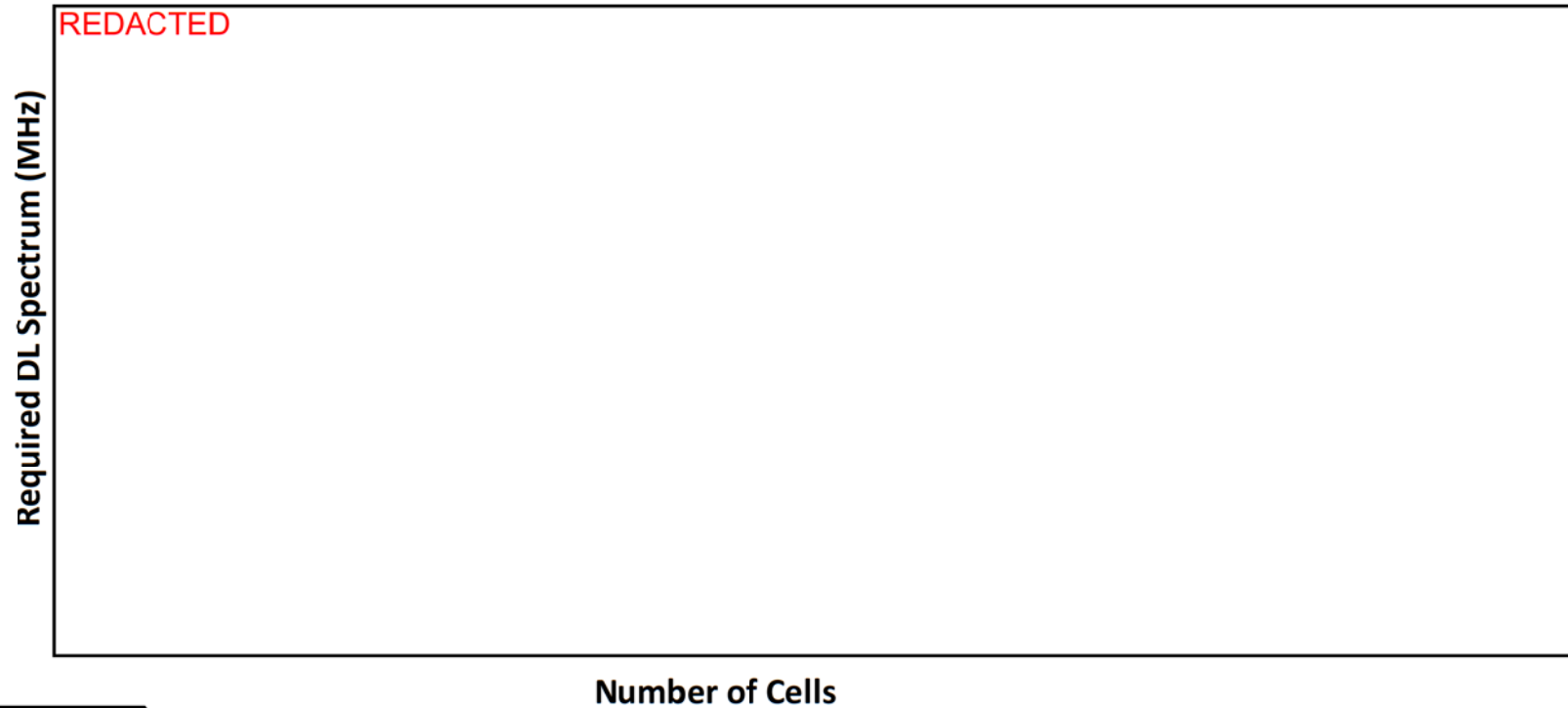
# Minimum Spectrum Requirement Analysis 2021

- Similar analysis as 2016, but with increased traffic in 2021 (forecast based on Cisco's VNI)



# Spectrum Forecasts for 3UK in London

- Adding more sites in congested sites reduces required DL spectrum



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[Redacted text]

[Redacted text]



# Minimum Spectrum Requirement Analysis Conclusion

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[Redacted text]

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**Thank you**  
Networks Business