Determination to resolve disputes concerning BT's tiered termination charges in NCCNs 1101, 1107 and 1046

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Final Determination
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Contents

Glossary of terms

080 Determination: The determination of 5 February 2010 made in respect of Ofcom case ref: CW/01036/03/09, resolving disputes between BT and each of T-Mobile, Vodafone, O2 and Orange concerning BT's tiered, variable termination charges for calls to 080 numbers contained in NCCN 956.

0845/0870 Determination: The determination of 10 August 2010 made in respect of Ofcom case ref: CW/01042/01/10 resolving disputes between BT and each of Vodafone, T-Mobile, H3G, O2, Orange and Everything Everywhere concerning BT's tiered, variable termination charges for calls to 0845 and 0870 numbers contained in NCCNs 985 and 986.

08x Determinations: means the 080 Determination and the 0845/0870 Determination.

2003 Act: the Communications Act 2003.

ARP: Average retail price.

CAT: Competition Appeal Tribunal.

CC: Competition Commission.

CP: Communications provider.

CoA: Court of Appeal.

Direct effect: the impact of the NCCN on retail prices of calls to the relevant numbers.

Disputed NCCNs: NCCNs 1101, 1107 and 1046.

Indirect effect: the impact of the NCCN on service providers and, through improved services, callers, i.e. consumers of such calls.

MCT: Mobile Call Termination.

Mobile tariff package effect: the impact of the termination charges contained in an NCCN on the prices of other mobile services in the overall MNO offering to its customers.

MNO: Mobile Network Operator; Everything Everywhere, H3G, Vodafone and O2 are collectively referred to as the MNOs.

MTR: Mobile termination rate.

MVNO: Mobile Virtual Network Operator.

NCCN: Network Charge Change Notice, the mechanism by which BT notifies other communications providers of changes to its charges pursuant to paragraph 12 of the Standard Interconnect Agreement.

NCCN 1046 Disputes: the disputes brought by EE, H3G, O2 and Vodafone against BT concerning BT's termination charges on 080 calls set out in NCCN 1046.

NCCN 1101 and 1107 Disputes: the disputes brought by EE against BT concerning BT's termination charges on 0843/4, 0871/2/3 and 09 calls set out in NCCNs 1101 and 1107 collectively.

NGC: Non-geographic calls.

NGCS review: Non-Geographic Calls Service Review, a review currently being undertaken by Ofcom.

NTNP: National Telephone Numbering Plan.

NTS: Number Translation Services.

NTS Condition: NTS Call Origination Condition, one of a number of remedies imposed by Ofcom as a result of BT's market power in the market for 'call origination on public fixed narrowband networks'.[1]

NTS hosting: Call management and routeing services provided by the TCP to the NTS SP.

OCP: Originating Communications Provider.

Retention: MNOs retail call price excluding VAT, minus the applicable termination charge.

SMP: Significant Market Power.

SP: Service Provider, the organisations who use NTS numbers for consumers, citizens and business to contact them.

TCP: Terminating Communications Provider.

WTC: Wholesale Termination Charge.

WTS: Wholesale Tariff Schedule.

[1] This condition was set under the 'Review of the fixed narrowband services – wholesale markets', 15 September 2009 (the 'Wholesale narrowband market review')
http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf

Section 1

Summary

1.1 This statement and determination (the "Final Determination") sets out our resolution of the following disputes (together "the Disputes"):[2]

- the disputes brought by Everything Everywhere ("EE") concerning the wholesale termination charges ("WTCs") set by British Telecommunications plc ("BT") for calls to 0843/4 and 0871/2/3 numbers hosted on BT's network, as set out in Network Charge Change Notice ("NCCN") 1101, and BT's WTCs for calls to 09 numbers hosted on BT's network, as set out in NCCN 1107[3] (the "NCCN 1101 and 1107 Disputes"); and

- the disputes brought separately by EE, Telefonica UK Limited ("O2"), Hutchison 3G UK Limited ("H3G"), and Vodafone Group Services Limited ("Vodafone") (collectively "the MNOs") concerning BT's WTCs for calls to 080 numbers hosted on BT's network, as set out in NCCN 1007 as corrected by NCCN 1046[4] (the "NCCN 1046 Disputes").

1.2 The WTCs in the Disputes are referred to as being 'tiered' as they vary according to the retail charges of the originating communications provider ("OCP") in a series of steps (this type of charging is also known as 'ladder' pricing). The charges are paid by fixed and mobile communications providers to BT for terminating calls to the number ranges specified in the NCCNs in dispute ("the affected number ranges").

1.3 Ofcom has previously considered disputes concerning tiered WTCs introduced by BT in relation to the 080, 0845 and 0870 number ranges (together "the 08x cases").[5]

1.4 In the Disputes, the MNOs contend that BT's WTCs are unfair and unreasonable.[6] The MNOs claim that the WTCs will have a negative impact on consumers, or that at a minimum, BT has failed to demonstrate that the charges will benefit consumers.

1.5 BT on the other hand believes the WTCs in the Disputes comply with Ofcom's analytical framework[7] and are beneficial to consumers or at a minimum that the

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[2] We felt it appropriate to set out our provisional conclusions for the Disputes in one document given we consider substantively the same issues in both cases.
[3] NCCN 1107 supersedes NCCN 1102. NCCN 1102 introduced tiered termination charges to the 09 number range and was effective 1 November 2011 to 30 November 2011. NCCN 1107 was effective 1 December 2011.
[4] NCCN 1046 supersedes NCCN 1007. NCCN 1046 corrects for typographical errors in NCCN 1007. In our view, there is no substantive difference between NCCN 1046 and NCCN 1007. Throughout the remainder of this document we refer to NCCN 1046.
[5] On 5 February 2010 Ofcom issued a determination resolving disputes between BT and each of T-Mobile (UK) Limited ("T-Mobile"), Vodafone, O2 and Orange Personal Communications Services Limited ("Orange") concerning BT's WTCs for calls to 080 numbers under NCCN 956 ("the 080 Determination") For further details see: http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01036/. On 10 August 2010 Ofcom issued a determination resolving disputes between BT and each of Vodafone, T-Mobile, H3G, O2, Orange and EE concerning BT's termination charges for calls to 0845 and 0870 numbers under NCCNs 985 and 986 ("the 0845/70 Determination"). For further details see: http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01042/. We refer to our work in these disputes as "0845/70 Disputes."
[6] The MNOs also contend that BT's WTCs represent an abuse of a dominant position by BT. H3G did not raise the issue that the charges in NCCN 1046 represented an abuse of a dominant position by BT.

MNOs have not demonstrated that there will be a material disbenefit to consumers as a result of the introduction of the WTCs in dispute.

1.6 The MNOs have requested that Ofcom:

- direct BT to withdraw the NCCN(s);
- require BT to make repayments where appropriate (together with interest); and
- direct BT not to introduce similarly structured WTCs.[8]

1.7 Ofcom accepted the Disputes for resolution with scopes of determining whether it is fair and reasonable for BT to apply the WTCs for calls to 080, 0843/4, 0871/2/3 and 09 numbers hosted on its network, specifically set out in NCCNs 1101, 1107 and 1007 (as amended by NCCN 1046), which are based on the level of the retail charge imposed by OCPs for calls to these numbers.[9]

Ofcom's conclusions on the matters in dispute

1.8 Ofcom considers that it could be fair and reasonable for BT to introduce tiered WTCs. In order to assess whether the charges in the Disputes are fair and reasonable we have used an analytical framework which is substantively the same as that which we used in the 08x cases and which sets out an approach that was considered appropriate by the Competition Appeal Tribunal ("CAT") and by the Court of Appeal ("CoA") in the subsequent appeal of the CAT's Judgment. Broadly, the framework comprises three principles:

- to satisfy the first principle, the WTCs should not deny MNOs the opportunity to recover their efficient costs of originating calls;
- to satisfy the second principle, the WTCs should be beneficial to consumers; and
- to satisfy the third principle, the WTCs should be practical to implement.

1.9 These principles are cumulative, in the sense that each principle must be satisfied before Ofcom will consider a charge to be fair and reasonable.

Provisional Conclusions

1.10 On 4 December 2012, Ofcom issued its Provisional Conclusions in relation to the Disputes, the analysis and provisional findings of which are set out in Sections 3-6. We provisionally concluded that the charges in NCCNs 1101, 1107 and 1046 are not fair and reasonable. We proposed to determine that BT should withdraw the NCCNs and revert to the terms on which they were trading prior to the imposition of NCCNs 1101, 1107 and 1046.

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[7] BT raises this argument in the NCCN 1046 Disputes in relation to the analytical framework used by Ofcom in the 080 Determination.
[8] In the NCCN 1046 Disputes, EE also requests that Ofcom direct BT to introduce an origination payment for MNOs for all calls that are free-to-caller.
[9] Ofcom did not accept the contention that BT's WTCs represent an abuse of a dominant position as part of the scope of the Disputes. Whilst we note the parties to the Disputes raise arguments in relation to BT having market power, given this is not within the scope of the Disputes we do not set out these issues in this document.

Final Determination

1.11 We received a number of responses to our Provisional Conclusions. In coming to our final conclusions on the matters in the Disputes, we have carefully considered those responses. In Section 7, we set out a summary of the responses and our response to the issues raised.

1.12 Having taken account of the responses received, we have decided that our overall conclusions should remain unchanged from our Provisional Conclusions (see Section 8). We therefore conclude that the charges NCCNs 1101, 1107 and 1046 are not fair and reasonable. Our overall conclusions in relation to each of the three principles are as follows:

Principle 1

1.13 Our analysis in this investigation has led us to conclude that, in relation to each of NCCNs 1101, 1107 and 1046, the introduction of those NCCNs should not prevent the MNOs from recovering their efficiently incurred costs of call origination. We therefore conclude that Principle 1 is satisfied in relation to each of the three NCCNs.

Principle 2

1.14 We have identified that there are two distinct groups of consumers that may be affected by the NCCNs: callers and service providers. Having considered the Direct effect, MTPE and Indirect effects of the three NCCNs, and taking account of any effects on competition arising from the introduction of the NCCNs, we have concluded that Principle 2 is not satisfied in relation to any of the three NCCNs.

Principle 3

1.15 We consider that there is some uncertainty as to whether it is practical to implement the relevant WTCs. In light of our conclusions in relation to Principle 2, we do not consider that it is necessary for us to reach a definitive conclusion in relation to whether NCCNs 1101, 1107 or 1046 satisfy Principle 3 and therefore do not do so.

Overall conclusion

1.16 Taking into consideration our assessment across the three Principles, and in particular the fact that we find that none of the NCCNs satisfies Principle 2, we conclude that it is not fair and reasonable for BT to apply the termination charges set out in NCCNs 1101, 1107 or 1046.

1.17 In light of our final conclusions that none of the WTCs in NCCNs 1101, 1107 and 1046 are fair and reasonable, we determine that BT should withdraw the NCCNs and revert to the terms on which they were trading prior to the coming into effect of NCCNs 1101, 1107 and 1046.

1.18 To the extent that BT has received any payments under the NCCNs in dispute, we conclude that it is appropriate for Ofcom to exercise its powers under section 190(2)(d) of the 2003 Act to require BT to repay by way of an adjustment for overpayment any amounts paid under the NCCNs together with interest on these amounts at the contractual rate, the Oftel Interest Rate. This will return all parties to the position that would have prevailed prior to the introduction of the NCCNs in dispute.

Structure of the remainder of this document

1.19 The remainder of this document is set out as follows:

- Section 2 sets out the relevant factual background to the Disputes.
- Section 3 discusses the analytical framework we have developed to help us resolve the Disputes in a manner that is consistent with our regulatory and statutory duties.
- Sections 4-6 set out our analysis and our provisional conclusions in relation to each of the three NCCNs in dispute. An explanation of how we carried out our quantitative analysis is set out at Annex 3 and the results of our quantitative analysis is set out at Annex 4.
- Section 7 summarises the submissions we received following our Provisional Conclusions and sets out our response to the points made. An explanation of how we carried out our supplementary quantitative analysis is set out at Annex 5 and the results of our supplementary quantitative analysis are set out at Annex 6.
- Section 8 sets out our final conclusions as to whether the NCCNs are fair and reasonable and whether in light of these conclusions it is appropriate for BT to make repayments to any of the MNOs. Our Determinations to resolve the Disputes are set out in Annexes 1 and 2.

Section 2

Introduction and background

Disputes referred to Ofcom

NCCNs 1101 and 1107

EE's submission

2.1 EE sent us a dispute submission on 14 March 2012 ("EE's NCCN 1101 and 1107 dispute submission"). In its submission, EE alleges that the WTCs in NCCNs 1101 and 1107 are not fair and reasonable and are likely to result in a material disbenefit to consumers or, alternatively, are unlikely to provide a benefit to consumers. We set out further detail of EE's submission in relevant parts of our analysis in Sections 4-7.

2.2 In its submission, EE contends that the termination charges represent an abuse of a dominant position by BT in the market(s) for the termination of calls to the number ranges covered by the NCCNs.[10]

2.3 EE submits that Ofcom should: direct BT to withdraw NCCNs 1101 and 1107, require BT to make repayments where appropriate[11] (together with interest) and direct BT not to introduce similar "ladder" charges.

BT comments on EE's submission

2.4 We gave BT a copy of EE's NCCN 1101 and 1107 dispute submission. In response,[12] BT noted that EE has not demonstrated that there will be a material disbenefit to consumers as a result of the introduction of NCCNs 1101 and 1107.[13] BT also provided a note from Professor Dobbs to support its position. We discuss BT's letter and Professor Dobbs' note in the relevant parts of our analysis in Sections 4-7.

NCCN 1046

The MNOs' submissions

2.5 On 17 August 2010 we received a dispute submission from EE ("EE's NCCN 1046 dispute submission"). We subsequently received further dispute submissions from

[10] The question of whether BT has a dominant position in the market and the contention that the introduction of NCCNs 1101 and 1107 represents an abuse of that position are beyond the scope of the Disputes so we do not go on to address this contention in our analysis in Sections 4-7. In the 080 Determination, we noted that BT is not under SMP obligations or any pricing regulation in a market that includes the termination of 080 calls. Furthermore, for the period relevant to the 080 Determination no analysis of dominance by BT was undertaken and so there was no finding of dominance (or non-dominance). We noted that, as the 080 Determination was not a Competition Act investigation, it did not consider whether there was an abuse of a dominant position. We consider that the same reasoning applies in the context of the Disputes.

[11] [✂].

[12] BT letter of 26 March 2012: Potential dispute relating to BT's termination charges for 0844, 0871 and 09 calls.

[13] BT also rejected EE's assertion that the introduction of NCCNs 1101 and 1107 pursuant to its contractual right under paragraph 12 of the SIA, can amount in and of itself, to any indication of dominance or SMP.

O2 (dated 23 September 2010) ("O2's NCCN 1046 dispute submission"), Vodafone (dated 8 October 2010) ("Vodafone's NCCN 1046 dispute submission") and H3G (dated 25 October 2010) ("H3G's NCCN 1046 dispute submission").

2.6 In their initial dispute submissions, the MNOs all make the following key arguments:

- the charges in NCCN 1046 will not be beneficial to consumers and would instead result in higher 080 call charges to consumers;
- BT is not justified in introducing the charges as set out in NCCN 1046;
- WTCs should not be linked with retail charges and should instead be based upon underlying costs;
- the structure of charges in NCCN 1046 is discriminatory and unfair; and
- NCCN 1046 is unworkable and impractical.

2.7 We set out other arguments made by specific MNOs in Section 6.

2.8 The MNOs submit that Ofcom should:

- direct BT to withdraw NCCN 1046;
- require BT to make repayments where appropriate (together with interest); and
- direct BT not to introduce similar "ladder" charges.

2.9 In addition, EE submits that Ofcom should direct BT to introduce an origination payment for MNOs for all calls that are free-to-caller.

BT's comments on the MNOs' submissions

2.10 We provided BT with copies of the MNOs' submissions.[14] BT responded with a submission[15] setting out its views on how it believed the WTCs in NCCN 1046 satisfied the three principles comprising Ofcom's analytical framework from the 080 Determination. In our analysis in Section 6 we refer to the specific arguments made by BT.

Calls to the affected number ranges

2.11 All of the number ranges covered by the NCCNs in the Disputes are non-geographic number ranges. Non-geographic numbers do not relate to a specific geographic location, and calls to these numbers are therefore 'translated' by the network to a geographic number in order to deliver the call to its destination. Because of this, non-geographic calls ("NGC") are also referred to as 'number translation services' ("NTS").

[14] BT responded to EE's submission on 8 October 2010, to O2's submission on 11 October 2010 and to H3G's submission on 3 December 2010.
[15] BT's submission of 8 October 2010 is its most detailed submission on the issues raised by the MNOs which we refer to as "BT's NCCN 1046 dispute submission."

2.12 Non-geographic numbers are typically used by Service Providers ("SPs") to provide a range of services to callers. These calls generally involve a number of parties in addition to the caller and the SP, including the OCP that originates the call and the terminating communications provider ("TCP") that hosts the number called on behalf of the relevant SP. The role of these different parties is as follows:

- a caller on a fixed or mobile network operated by the OCP dials a number in the affected number range;

- the OCP identifies this as a NGC and conveys the call to the appropriate TCP either directly or by using a transit operator. Where the call is handed over from an OCP to a TCP, the OCP typically keeps a portion of the money paid by the consumer for making the call. The rest of the money is paid to the TCP as a termination payment. Where calls are not charged to the consumer (for example some calls to 080 numbers which is discussed further below) there may be a payment to the OCP by the TCP or SP;

- the TCP then identifies the geographic number mapped to the non-geographic number and sends the call to that location. As mentioned above, TCPs generally receive termination revenue from OCPs for calls to non-geographic numbers which they host. For some number ranges, the regulatory regime[16] supports the use of NTS as a micro-payment mechanism for the various services offered by SPs. The TCP may pass some of the termination revenue to the SP and this helps pay for the service being provided by the SP (this is known as 'revenue sharing'). The TCP may also charge the SP for the hosting service it provides. In the case of low-cost calls to non-geographic numbers, the TCP may not share the termination revenues with the SP but instead may reduce or waive the charges for hosting services that the SP would otherwise pay; and

- the call is received by the SP (this may include going through an intermediary such as a reseller, which offers hosting services for non-geographic numbers).

2.13 An SP's decision as to which number range to use to offer its services will be based in part on the retail price at which it expects calls to that number to be offered and the attractiveness of the deals they can obtain from TCPs. Further background on each of the affected number ranges is set out at paragraphs 2.15-2.28. For example, charities generally select 080 or lower cost 08 numbers in order to enable their customers to contact them at zero or low cost. SPs which intend to generate income, such as those running voting lines for high profile TV shows, are more likely to select higher rate 08 numbers or 09 numbers.

2.14 Callers decide whether to use number translation services based on the retail price (to the extent the retail price is known by them) and the value or attractiveness of the services offered by SPs. As noted above, whilst callers have no direct payment

[16] The regulatory mechanism that heavily influences revenue sharing is the NTS Call Origination Condition ("NTS Condition") which is one of a number of remedies imposed by Ofcom as a result of the BT's Significant Market Power ("SMP") in the market for 'call origination on public fixed narrowband networks.' A key feature of the NTS Condition is an obligation on BT to originate and retail calls to certain NTS numbers on behalf of TCPs. BT is only permitted to retain cost-related charges for originating those NTS calls (including costs of retailing) and must pass the remaining revenues over to the TCP. This allows the TCP to cover its costs of termination and hosting and pass on some of the termination charge to the SP in the form of a revenue share.

relationship with SPs, revenue sharing arrangement by which TCPs pass through a proportion of their termination revenue provides a form of micropayment for services provided by SPs.

The affected number ranges and NCCNs in dispute

NCCN 1101

2.15 BT notified industry of changes to the WTCs which relate to the 0843/4 and 0871/2/3 numbers on 2 September 2011 through NCCN 1101 which came into effect on 1 October 2011.[17] The charges vary in a series of steps which depend on the retail price of the MNO originating the call, the time of the day the calls are made, and the charge band for the number called as set out in the NCCN. The features of NCCN 1101 are described in detail at Section 4.

0843/4 numbers

2.16 0843/4 numbers are used to access a wide range of lower cost services including pre- and post-sales enquiry lines, public sector services, transaction services and information services, as well as legacy pay-as you-go dial-up narrowband internet services.

2.17 The 0843/4 number range is designated as a "Special Services basic rate" in the National Telephone Numbering Plan ("NTNP").[18] The NTNP specifies that BT's retail price for calls to these numbers must be no greater than 4.26 pence per minute or per call.[19] The NTS condition regulates BT's retention on such calls. The NTNP does not place any restrictions on the retail prices of other OCPs, and hence retail prices for calls to these numbers may vary between OCPs.

0871/2/3 numbers

2.18 These number ranges are principally used to provide access to higher cost pre- and post-sales enquiry lines, some public sector services and services such as the international telephony services provided by resellers.

2.19 The 0871/2/3 number ranges are designated as "Special Services higher rate" in the NTNP. The NTNP specifies that BT's retail price for calls to these numbers must be no greater than 8.51 pence per minute or per call.[20] The NTS condition regulates BT's retention on such calls. The NTNP does not place any restrictions on the retail prices of other OCPs, and hence retail prices for calls to these numbers may vary between OCPs.

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[17] Prior to the introduction of NCCN 1101, OCPs paid per call and per minute termination charges to BT for calls to the relevant 0843/4 and 0871/2/3 numbers that are terminated on BT's network. These charges differed depending on the time of the day the calls were made and also by the applicable charge band set by BT.
[18] This is a document published by Ofcom that specifies the telephone numbers that Ofcom has determined should be available for allocation and the rules that Ofcom applies in specifying the uses for all number ranges, including NTS number ranges. Communications providers to whom Ofcom has allocated NTS numbers are responsible for ensuring that these numbers are used in accordance with the designations given in the NTNP.
[19] This figure is exclusive of VAT.
[20] This figure is exclusive of VAT.

NCCN 1107

2.20 BT notified industry of changes to the WTCs which relate to the 09 number ranges on 3 October 2011 through NCCN 1102 which was effective from 1 to 30 November 2011. NCCN 1107 supersedes NCCN 1102. NCCN 1107 was effective 1 December 2011, and specifies wholesale tariff schedules covering the same charge bands as NCCN 1102.

2.21 The charges in NCCN 1107 and NCCN 1102 vary in a series of steps according to the retail charges of the MNO originating the call, the time of the day the calls are made and the charge bands of the calls. The features of NCCN 1107 are described in detail at Section 5.

09 numbers

2.22 09 numbers are designed for Premium Rate Services ("PRS") and are used mainly to access competitions, TV voting lines, scratch cards, adult entertainment, chat lines and some post-sales services such as technical support.

2.23 The 09 number range is designated as "Special Services Premium Rate" in the NTNP. The NTNP specifies that BT's retail price for calls to these numbers are generally either (a) higher than 8.51 pence per minute up to and including 127.66 pence per minute or (b) fixed fee calls costing over 8.51 pence up to and including 127.66 pence per minute.[21] The NTS condition regulates BT's retention on such calls. The NTNP does not place any restrictions on the retail prices of other OCPs, and hence retail prices for calls to these numbers may vary between OCPs.

NCCN 1046

2.24 BT notified industry of the changes to the WTCs which relate to the 0800 and 0808 number ranges (together "080" number range) on 3 March 2010 through NCCN 1007 which came into effect on 1 April 2010. Certain amendments to the WTCs in NCCN 1007 were made by NCCN 1046 which was effective from 25 August 2010.[22]

2.25 The WTCs set out in NCCN 1007 replace those set out in NCCN 911. BT initially introduced WTCs set out in NCCN 956 to replace those in NCCN 911 but was required to withdraw NCCN 956 as a result of the 080 Determination. The features of NCCN 1046 are described in detail at Section 6.

080 numbers

2.26 080 numbers are used for a variety of services, which are provided by both private and public organisations. Typical services can include non-profit and charity helplines, some government and social services, customer sales enquiry lines, and customer support lines for commercial services.

[21] All figures are exclusive of VAT.

[22] For the purposes of resolving of the Disputes we have undertaken our analysis using NCCN 1046 from 1 April 2010 given the limited amount of time NCCN 1007 was in place. NCCN 1046 corrects for typographical errors in NCCN 1007. In our view, there is therefore no substantive difference between NCCN 1046 and NCCN 1007.

2.27 The 080 number range is designated as “Special Services” in the NTNP. The NTNP specifies that the calls should be free of charge except where charges are notified to callers at the beginning of the calls.

2.28 Ofcom’s policy preference is that calls to 080 numbers ought to be free or as close to free as possible to the caller.[23] Our preference is not altered by the fact that many MNOs charge for some 080 calls.[24]

Ofcom’s strategic review of non-geographic numbers

2.29 We are currently undertaking a strategic review of non-geographic numbers which aims to simplify their presentation and use. This is known as the Non-Geographic Calls Service (“NGCS”) review.

2.30 In December 2010 we published a consultation (“NGCS review December 2010 consultation”) which set out our view that the market was not working well for consumers. We consulted on options for wide-ranging changes to the regulation of non-geographic numbers to address the problems identified.[25] The responses to that consultation and our subsequent research provided further evidence of our view that there was clearly identified substantial consumer detriment arising from the retail market failures and this supported a case for reform of that market.

2.31 In April 2012, we published a further consultation setting out more detailed proposals for changes to the way non-geographic calls are regulated (“NGCS review April 2012 consultation”). This consultation sets out proposals to make prices of non-geographic calls clearer to consumers as follows:[26]

- freephone (specifically 080) numbers: we have proposed that calls to 080 numbers should be completely free from all fixed and mobile telephones; and

- unbundled tariff: we have proposed to introduce a new tariff structure for most other non-geographic number ranges (including all 084, 087 and 09 number ranges). Our proposal involves separately making transparent to consumers: (i) the money that is paid to a customer’s phone company for originating the calls and (ii) the money that is paid to the TCP to cover the costs of routing and managing the non-geographic numbers, the cost of the receiving the call service and, where this occurs, payment for the service the consumer is receiving.

2.32 We believe the analysis and assessment we have undertaken in resolving the Disputes is consistent with our latest thinking in the NGCS review, the next document

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[23] The 080 Determination, paragraph 2.33.
[24] Some calls to some 080 numbers are free from all OCPs (including the MNOs). These “zero rated” calls are the result of direct, bilateral, arrangements between OCPs and SPs. We understand that most of these arrangements are brokered by the Helplines Association (“THA”), see http://www.helplines.org.uk/. MNOs (as OCPs) absorb the cost of origination for these calls and receive no payment either from the caller or the called party. Zero-rating arrangements can also be concluded outside THA processes. We understand that some of these SPs may pay a fee direct to the MNO to cover the costs of origination. For example, in 2010, the Department of Work and Pensions (“DWP”) reached a commercial agreement with O2, Orange, Tesco Mobile, T-Mobile, Virgin Mobile and Vodafone to end charges to their customers for mobile calls to around seventy of its 0800 numbers, see: http://www.dwp.gov.uk/previous-administration-news/press-releases/2010/january-2010/dwp007-150110.shtml.
[25] http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-numbers/summary/non-geo.pdf.
[26] http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geographic-no/.

for which is due to be published shortly. As part of that review, we will shortly be publishing our policy position on changes to the regulation of NGCS.

Dispute resolution

Ofcom's duty to handle disputes

2.33 Section 185(1)(a) of the 2003 Act provides (in conjunction with section 185(3)) that in the case of a dispute relating to the provision of network access between different CPs, any one or more of the parties to such a dispute may refer it to Ofcom. Section 185(1A) of the 2003 Act provides (in conjunction with section 185(3)) that in the case of a dispute relating to the provision of network access between a CP and a person who is identified, or is a member of a class identified, in a condition imposed on the CP under section 45 of the 2003 Act, and where the dispute relates to entitlements to network access that the CP is required to provide to that person by or under that condition, any one or more of the parties may refer it to Ofcom. Where a dispute appears to satisfy the criteria of both section 185(1) and section 185(1A) of the 2003 Act, it is to be treated for the purposes of both section 186 and section 190 of the 2003 Act, as falling within section 185(1A) of the 2003 Act.[27]

2.34 Section 186(2) of the 2003 Act provides that where a dispute is referred to Ofcom in accordance with section 185, Ofcom must decide whether or not it is appropriate to handle it. Section 186(3) provides that Ofcom must decide that it is appropriate for it to handle a dispute falling within section 185(1A) unless there are alternative means available for resolving the dispute. A resolution of the dispute by those means must be consistent with the Community requirements set out in section 4 of the 2003 Act, and those alternative means must be likely to result in a prompt and satisfactory resolution of the dispute.

Ofcom's powers when determining a dispute

2.35 Ofcom's powers in relation to making a dispute determination are limited to those set out in section 190 of the 2003 Act. Except in relation to disputes relating to the management of the radio spectrum, Ofcom's main power is to do one or more of the following:

- make a declaration setting out the rights and obligations of the parties to the dispute (section 190(2)(a));
- give a direction fixing the terms or conditions of transactions between the parties to the dispute (section 190(2)(b));
- give a direction imposing an obligation to enter into a transaction between themselves on the terms and conditions fixed by Ofcom (section 190(2)(c)); and
- give a direction requiring the payment of sums by way of adjustment of an underpayment or overpayment, in respect of charges for which amounts have been paid by one party to the dispute, to the other (section 190(2)(d)).

[27] See paragraph 148 of [2012] CAT 28, Telefonica UK Limited v Ofcom.

2.36 A determination made by Ofcom to resolve a dispute binds all the parties to that dispute (section 190(8)).

Ofcom's duties when determining a dispute

2.37 When resolving a dispute under the provisions set out in sections 185 to 191 of the 2003 Act, Ofcom is exercising one of its regulatory functions. As a result, when Ofcom resolves disputes it must do so in a manner which is consistent with both Ofcoms general duties in section 3 of the 2003 Act, and (pursuant to section 4(1)(c) of the 2003 Act) the six Community requirements set out in section 4 of the 2003 Act. The six Community requirements give effect, amongst other things, to the requirements of Article 8 of the Framework Directive.[28]

2.38 Where a dispute falls within section 185(1) of the 2003 Act, section 190 (2A) of the 2003 Act provides that Ofcom must exercise their powers in the way that seems to them most appropriate for the purpose of securing: efficiency, sustainable competition, efficient investment and innovation and the greatest possible benefit for the end-users of public electronic communications services. Section 190(2A) can only apply to those disputes that are conducted as well as determined after the date on which it came into operation (26 May 2011).[29] We do not consider that section 190(2A) of the Act applies to the Disputes (see above and paragraph 2.40 below). In any event we consider that our analytical framework and proposed resolution of the Disputes in accordance with our statutory duties is consistent with these objectives and that these are captured in the three principles of our analytical framework as set out in Section 3.[30]

Accepting the Disputes for resolution

NCCNs 1101 and 1107

2.39 Having considered all of the comments made by EE and BT, Ofcom was satisfied that the parties were in dispute in relation to the charges set out in NCCNs 1101 and 1107 within the meaning of section 185(1A) of the 2003 Act. If that were not the case, Ofcom considered that it would have jurisdiction under section 185(1)(a) of the 2003 Act, and that Ofcom would exercise its discretion to handle the dispute. Ofcom considered that the dispute meets the relevant statutory criteria and it is appropriate for Ofcom to handle according to section 186 of the 2003 Act. Accordingly, Ofcom accepted the dispute for resolution on 4 April 2012 and informed the Parties of the decision shortly thereafter.

NCCN 1046

2.40 Ofcom accepted the NCCN 1046 Dispute for resolution on 10 September 2010 having considered all the representations made by EE[31] and BT.[32] Ofcom concluded

[28] Directive 2002/21/EC of 7 March 2002.
[29] See paragraph 133 of [2012] CAT 28, Telefonica UK Limited v Ofcom.
[30] See paragraph 150 of [2012] CAT 28, Telefonica UK Limited v Ofcom.
[31] EE notes at paragraph 1.7 of its dispute submission that NCCN 1046 was notified to each of T-Mobile and Orange prior to the completion of the joint venture between T-Mobile and Orange to form EE and that each of T-Mobile and Orange are in dispute with BT regarding NCCN 1046. Where we refer to EE in the context of the NCCN 1046 Dispute, we mean T-Mobile and Orange.

that the NCCN 1046 Dispute falls within the scope of section 185(1) of the Act and pursuant to Section 186 of the Act we considered that it is appropriate for us to handle the dispute.[33] Ofcom also considered that the dispute satisfies the criteria set out in our dispute resolution guidelines, and in line with those guidelines, we did not consider that there are appropriate alternative means for resolving the dispute.[34]

2.41 We also received dispute submissions from O2, H3G and Vodafone in relation to the WTCs set out in NCCN 1046. We decided that the principal issues raised in these submissions were essentially the same as those we were already considering in the NCCN 1046 Dispute. We therefore decided that BT and each of EE, O2, H3G and Vodafone were in dispute about BT's termination charges for 080 calls and considered it appropriate to join O2, H3G and Vodafone as parties to the NCCN 1046 Dispute.

Scope of the Disputes

NCCNs 1101 and 1107

2.42 On 4 April 2012, Ofcom published details of these disputes, including the scope, in our Competition and Consumer Enforcement Bulletin.[35] The scope of the NCCN 1101 and 1107 Disputes is:

> *To determine whether it is fair and reasonable for BT to apply termination charges for calls to 0843/4 and 0871/2/3 number ranges, specifically set out in NCCN 1101, and the 09 number range, specifically set out in NCCN 1107, hosted on its network, which are based on the level of the retail charge imposed by OCPs for calls to these numbers.*

2.43 NCCNs 1101 and 1107 contain a number of different wholesale tariff schedules that correspond to BT's retail price charge bands for the 0843/4, 0871/2/3 and 09 number ranges covered by these NCCNs.[36] The wholesale tariff schedule varies by charge band and also by time of day (i.e. daytime, evening and weekend).

2.44 NCCN 1101 specifies different wholesale tariff schedules for 13 charge bands with three time of day variants for each charge band. Hence there are in total 39 different wholesale tariff schedules for NCCN 1101. NCCN 1107 specifies wholesale tariff

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[32] On 15 November 2010 BT appealed Ofcom's decision to accept the NCCN 1046 Dispute for resolution. The appeal was heard by the CAT on 7 and 8 March 2011. The CAT issued its judgment on 3 May 2011 and unanimously dismissed BT's appeal. *British Telecommunications plc v Office of Communications* [2011] CAT 15 http://www.catribunal.org.uk/files/1171-72_BT_Judgment_030511.pdf.

[33] Ofcom accepted the NCCN 1046 Dispute for resolution prior to the date that section 185(1A) of the 2003 Act came into force (i.e. 26 May 2011). Ofcom considers the NCCN 1046 Dispute to be a section 185(1) dispute as each of the Parties to the dispute is a Communications Provider and the dispute relates to provision of network access given that it concerns interconnection between each of the MNOs and BT under the terms of the Standard Interconnect Agreement: https://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Telephony.html. Our powers and duties to resolve certain disputes are set out at sections 185-191 of the 2003 Act.

[34] Since the dispute was accepted we have updated our dispute resolution guidelines.

[35] See http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/open-cases/all-open-cases/cw_01088/.

[36] Each of these charge bands corresponds to a particular retail price that BT charges its customers for making a call to a number in this range. An SP who purchases a hosting service from BT for one of these number ranges thus indicates its preferred retail call price, and BT issues the SP with a number from a range that is priced at this point.

schedules for 53 charge bands with three time of day variants for each charge band. Hence there are in total 159 different wholesale tariff schedules for NCCN 1107.

NCCN 1046

2.45 On 14 September 2010, we published details of the NCCN 1046 Dispute, including the scope, in our Competition and Consumer Enforcement Bulletin.[37] The scope of the dispute is:

> *To determine whether it is fair and reasonable for BT to apply new termination charges for calls to 080 numbers hosted on its network, which are based on the level of the retail charge made by OCPs for calls to these numbers, as specifically set out in NCCN1007 (as corrected by NCCN1046).*

Interested parties

2.46 Six stakeholders, Virgin Media[38], Gamma[39], Vodafone, H3G, Cable & Wireless Worldwide[40] and O2 have expressed an interest in the NCCN 1101 and 1107 Disputes. Of these interested parties, Vodafone[41] and H3G[42] provided us with more substantive submissions which we refer to in further detail in Sections 4-6 as relevant.

2.47 Two stakeholders, Cable & Wireless Worldwide and Virgin Media, have expressed an interest in the NCCN 1046 Disputes.

Information relied upon in resolving the Disputes

Information from the parties collected as part of the Disputes

2.48 In coming to our Final Determination, we have relied on submissions made by the Parties and Interested Parties referred to above.[43] Additionally we have considered the related correspondence provided by the MNOs and BT including:

- responses from the MNOs and BT to our request for information[44] under section 191 of the 2003 Act dated 18 October 2010 (the "first s191 notice NCCN 1046 Dispute");[45]
- BT's responses to our letter 23 April 2012;

[37] http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/open-cases/all-open-cases/cw_01055/.
[38] Virgin Media Inc.
[39] Gamma Telecom Holdings Limited.
[40] Cable and Wireless Worldwide Plc.
[41] Vodafone submission 18 May 2012.
[42] H3G letter of 27 April 2012.
[43] Including EE's dispute submission, BT's response to EE's dispute submission, and the submissions made by the interested parties.
[44] We requested information to help inform us of the likely impact of NCCN 1046 and included questions regarding retail prices, call volumes, other TCPs.
[45] BT responded to this notice on 1 November 2010. EE responded to this notice on 2 and 5 November 2010. O2 responded to this notice on 2 and 3 November 2010. H3G responded to this notice on 1 and 4 November 2010. Vodafone responded to this notice on 1 November 2010.

- BT's responses to our questions 15 May 2012;
- material provided at or after a meeting with BT on 24 May 2012;
- material provided at or after a meeting with EE on 29 May 2012;
- responses to request for information[46] under section 191 of the 2003 Act to EE[47] dated 12 June 2012 ("first s191 notice NCCNs 1101 and 1107 Dispute") and our clarification questions related to this notice;[48]
- responses from Vodafone, O2 and H3G to our request for information[49] under section 191 of the 2003 Act dated 12 July 2012 (the "second s191 notice NCCN 1046 Dispute");[50]
- responses to our request for information[51] under section 191 of the 2003 Act to EE dated 17 July 2012 (the "second s191 notice for the Disputes");[52]
- letters from the MNOs and BT following the CoA Judgment in respect of the 08x cases; and
- responses to our Provisional Conclusions issued on 4 December 2012.

Other information

2.49 In reaching our Final Determination we also draw from information from the following sources:

- the NGCS review;
- information received in the context of the 08x cases;
- Judgments made by the CAT and CoA in respect of the 08x cases; and
- responses from the Interested Parties to the Disputes.

[46] We requested information to help inform the likely impact of the NCCNs in dispute on (i) EE's likely ability to recover its efficient costs of origination, (ii) retail prices for the number ranges in disputes and (iii) revenue retention earned by MNOs, BT and SPs on calls to the number ranges covered by the NCCNs in dispute.
[47] As the NCCN 1101 and 1107 Disputes relate to EE and not other MNOs, the information we requested (and our analysis) is limited in this regard.
[48] EE responded to the notice on 22 June 2012 and to our clarification questions on 6 July 2012.
[49] Given the passage of time since the first notice, we requested updated information from the MNOs.
[50] H3G and Vodafone responded on 27 July 2012. O2 responded on 27 July and 10 August 2012.
[51] Under this notice we requested information for both the NCCN 1046 Dispute and the NCCN 1101 and 1107 Disputes. In relation to the NCCN 1101 and 1107 Disputes we requested some information to better our understanding of other TCPs' WTCs and other information concerning retail revenue and numbers of mobile subscribers.
[52] EE responded to this notice on 31 July 2012.

The 08x cases

08x Determinations

2.50 On 5 February 2010, Ofcom issued a determination in respect of disputes between BT and each of T-Mobile, Orange, Vodafone and O2. The disputes concerned BT's WTCs for calls to 080 numbers as set out in NCCN 956. Ofcom concluded that the tariffs introduced by BT were not fair and reasonable.[53]

2.51 On 10 August 2010, Ofcom issued a determination in respect of disputes between BT and each of Vodafone, T-Mobile, H3G, O2, Orange and EE. The disputes concerned BT's WTCs for calls to 0845 and 0870 numbers, as set out in NCCNs 985 and 986. Ofcom concluded that the tariffs were not fair and reasonable.[54]

CAT Judgment and subsequent appeal to Court of Appeal

2.52 The 08x cases were appealed by BT to the CAT, whilst EE also appealed the 0845/0870 Determination. On 1 August 2011, the CAT handed down its judgment in respect of these appeals (the "CAT Judgment").[55] The CAT agreed with the analytical framework applied by Ofcom but disagreed with Ofcom's approach under the second principle in weighing up the various regulatory objectives to determine, on balance, that the tariffs would not benefit consumers. The CAT considered that where the assessment of consumer benefit was inconclusive, the balance should weigh in favour of the contractual right of the party proposing the change and concluded that BT was entitled to impose the 08x termination rates.

2.53 The CAT's decision was subsequently appealed to the CoA by O2 on the one hand, and collectively Vodafone, EE and H3G on the other. On 1-3 May 2012 the CoA heard the appeals on an expedited basis.

2.54 On 25 July 2012 the CoA handed down judgment in respect of those appeals (the "CoA Judgment").[56] The CoA rejected the CAT's assessment of the balancing exercise carried out by Ofcom and held that it was for the party proposing the variation to justify the change, rather than for the opponent to show that the change would be detrimental to consumers. The CoA held that it is for Ofcom to balance the various potentially conflicting considerations relevant to the regulatory objectives. Upholding the appeals, the CoA ordered the CAT Judgment to be set aside and restored Ofcom's determinations in respect of the 08x cases.

2.55 Particularly relevant to the Disputes is the CoA's view that the CAT had failed to give effect to material passages from its judgment in the TRD case,[57] in which it had given guidance to Ofcom on the test that Ofcom should adopt to determine what are

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[53] See: http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01036/.
[54] See: http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01042/.
[55] *BT and Everything Everywhere Limited v Ofcom* [2011] CAT 24. See: http://www.catribunal.org.uk/238-7221/Judgment.html.
[56] Telefonica O2 Ltd & others v British Telecommunications plc [2012] EWCA Civ 1002, 25 July. See http://www.catribunal.org.uk/files/1151_1168-69_Judgment_of_the_Court_of_Appeal_250712.pdf
[57] Case numbers 1089/3/3/07, 1090/3/3/07, 1081/3/3/07, 1092/3/3/7. See: http://www.catribunal.org.uk/files/Judgment_TRDs_200508.pdf.

reasonable terms and conditions as between the parties to a dispute.[58] The CAT in that case had also stated that the onus lay on the party proposing the variation to provide to the other party and to Ofcom the justification for changing the previous charges. The CAT's view was that Ofcom's first task was to examine the reasons for the changes to decide whether they are justified, as being both fair between the parties and reasonable from the point of view of the relevant regulatory objectives.

2.56 In the 08x cases, the CAT held in its Judgment there was no onus on BT to justify its termination charges in the relevant NCCNs in dispute.[59] The CoA rejected this, saying that Ofcom's duty is to impose a policy solution that meets the public policy objectives and the Common Regulatory Framework and therefore goes beyond simply determining the contractual rights of parties.[60]

2.57 The CoA found that Ofcom must be able to resolve a dispute between parties in the relevant market, who may or may not already be in contractual relations with each other. Moreover, the CoA concluded that neither the actual or previous contractual position, nor any right of BT to impose a change, can be of any overriding significance.[61] The CoA also made clear that in the first instance it was for "*BT to justify its changes, when challenged.*"[62] The CoA noted it is a "*function and duty of the regulator to consider all the various factors and to assess the balance of advantages and disadvantages, whether proved, probable, likely or merely possible, to take into account the degrees of probability in each case and the respective seriousness of each, and come to a balanced assessment overall as to what outcome would most appropriately meet the relevant regulatory objectives.*"[63]

2.58 The CoA Judgment in the 08x cases has since been followed by the CAT in Telefonica UK Limited v Ofcom,[64] in which the tribunal noted that "*the weight to be attached to different considerations in forming a value judgment is a matter for Ofcom, as the NRA charged with the duty of resolving disputes, and in the absence of any misdirection by Ofcom the court will normally respect its determination, whether or not the court would itself have balanced the considerations in the same way and reached the same conclusion.*"[65]

2.59 The Supreme Court granted BT leave to appeal the CoA Judgment in February 2013.

Exceptional circumstances

2.60 Given the NCCN 1046 Dispute raised substantively the same issues as the 08x cases which were at the time before the CAT (and have since been considered by the CoA), we considered that these were exceptional circumstances in which Ofcom was not able to make its Determination within the four month time-frame provided for under section 188(5) of the 2003 Act.

[58] CoA Judgment, see paragraphs 74 and 80.
[59] CAT Judgment, see paragraph 438.
[60] CoA Judgment, see paragraph 63.
[61] CoA Judgment, see paragraph 74.
[62] CoA Judgment, see paragraph 91.
[63] CoA Judgment, see paragraph 94.
[64] *Telefonica UK Limited v Ofcom* [2012] CAT 28.
[65] Paragraph 45 of the CAT's Judgment in [2012] CAT 28.

2.61 In the NCCN 1101 and 1107 Disputes, we concluded in June 2012 that the (at the time) impending CoA Judgment was likely to be relevant to the issues raised in the Disputes such that we considered we would not be able to proceed to making any provisional conclusions until the CoA Judgment had been handed down and we had an opportunity to consider the implications of the judgment on the matters in dispute. Again, we considered that this gave rise to exceptional circumstances for not being able to determine the Disputes within the statutory timeframe under section 188(5) of the 2003 Act.

Issuing our Provisional Conclusions and our Final Determination

2.62 On 4 December 2012 we issued our Provisional Conclusions, with a deadline for responses set at 28 December 2012. Ofcom announced on its website on 19 December 2012 that, following requests for an extension to the period for comment, Ofcom set a new deadline for comments of 4 January 2013.

2.63 We noted in our Provisional Conclusions that should BT's application to the Supreme Court for leave to appeal be granted, we might need to review how to proceed with resolving the Disputes.

2.64 As noted above, the Supreme Court has granted BT leave to appeal the CoA Judgment. That case has been listed to be heard in February 2014. We also note that BT is asking the Supreme Court to refer certain questions to the European Court of Justice if it consideres there is any doubt as to the correct interpretation of the relevant underlying European law. In light of the foregoing, we have given careful consideration to the timing of our Final Determination of the Disputes taking into account Ofcom's duty to resolve disputes as soon as possible, including where disputes cannot be resolved within the standard four month period, as is the case here. In light of our duties and the fact that we have now concluded our analysis we consider it is appropriate to publish our Final Determination to resolve these disputes. We do not consider there are strong reasons for any further delay.

Section 3

Analytical Framework

3.1 In order to assess whether the disputed charges are fair and reasonable, we have used an analytical framework which is substantively the same as that which we used in the 08x cases.

3.2 In setting up the analytical framework we have had regard to Article 8 of the Framework Directive and our statutory duties and in particular, our duties under sections 3 and 4 of the 2003 Act.

3.3 Under section 3(1), Ofcom's principle duty is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate, by promoting competition. Under section 4 our duties include, in particular, a duty to promote competition in relation to the provision of electronic communications networks and services and a duty to secure efficiency and sustainable competition in the markets for such networks and services and to secure the maximum benefit for the persons who are customers of communications providers.

3.4 The only modification we have made to the framework we used in the 08x cases is a refinement to the formulation of Principle 2, intended to improve clarity and to acknowledge the potentially beneficial impact of termination charges on competition, which we made in response to comments by the CAT.[66] This analytical framework was considered appropriate by both the CAT and the CoA in the subsequent appeals of the decisions in the 08x cases. Accordingly, we refer to the 08x cases in our discussion including; the 08x Determinations,[67] the CAT Judgment and the CoA Judgment.

3.5 In this Section we set out the three principles which comprise our analytical framework. The principles are as follows.

- ***Principle 1*** – The charges should not deny MNOs the opportunity to recover their efficient costs of originating calls.

- ***Principle 2*** – The charges should be beneficial to consumers. This is assessed by considering the following factors:

    1. *Direct effect:* impact of the proposed WTCs on MNOs' retail prices for NTS calls;

    2. *Mobile Tariff Package effect:* impact of the proposed WTCs on MNOs' retail prices for other mobile services;

[66] Whilst the CAT Judgment was overturned, we acknowledge the merits of some of the arguments made and refer to the CAT's consideration of the 08x cases in our analysis.
[67] We refer to our approach taken in the 080 Determination as our work to resolve the "080 Dispute". We refer to our approach taken in the 0845/0870 Determination as our work to resolve the "0845/0870 Dispute" .

3. *Indirect effect*: impact of the proposed WTCs on SP revenue, and through improved services, on callers; and

4. *Competition effect:* impact of the proposed WTCs on competition, whether beneficial or detrimental.

- ***Principle 3*** - The charges should be practical to implement.

3.6 In order for charges to be considered fair and reasonable, each of these principles must be satisfied.

3.7 In the remainder of this Section, we consider each principle in turn, setting out a description of the principle, discussing any issues relevant to that principle, including the approach in the 08x cases, and setting out the approach we adopt in resolving these Disputes.

Principle 1: Cost recovery by OCPs

3.8 For Principle 1 to be satisfied, the charges should not deny OCPs the opportunity to recover the efficient costs of originating calls to the affected number ranges.

The 08x cases

3.9 In the 080 Dispute we sought to assess Principle 1 by assessing if the average retention earned by an MNO on 080 calls (defined as the MNO's prevailing average retail price for 080 calls minus any termination charge) was greater than the efficient cost of mobile call origination. In practice, however, the MNOs were unable to provide estimates of their average retail prices, and we therefore found that we were unable to conclude that Principle 1 was satisfied.

3.10 Subsequently on appeal to the CAT, we accepted that Principle 1 was likely to be satisfied. This was because we recognised that for all possible 080 retail prices incurring a termination charge, average retention exceeded our estimates of the cost of origination. For all retail prices below this point, we noted that no termination charge applied and that to the extent the average retail price was below the efficient cost of origination, it was open to MNOs to increase their retail prices without incurring a termination charge.

3.11 In the 0845/0870 Dispute, we assessed Principle 1 by comparing the MNOs' retention at prevailing average retail prices for calls to the affected number ranges with their retention on geographic calls. We considered the cost recovery obtained by the MNOs on geographic calls was the appropriate reference point for cost recovery on 0845/0870 calls, given our policy preference for 0845/0870 call prices to be aligned with geographic call prices. We found that at current prices, the MNOs' average retention on 0845 and 0870 calls would have been at least as high under the NCCNs in dispute as their average retention on geographic calls.

3.12 We also considered how the retention might be affected if MNOs aligned prices for these calls with geographic call rates (i.e. if they moved towards prices consistent with our policy preference). We found that for 0870 calls, MNOs' retention would be similar to MNOs' retention on geographic calls. For 0845 calls, MNOs' retention would be somewhat lower but we considered it would still be sufficiently large relative to their retention on geographic calls that Principle 1 would be met. We noted there was nothing inherently problematic with MNOs' retention on 0845 calls being lower

than on geographic calls, since they could nevertheless recover their efficient costs of origination through combined pricing of 0845, 0870 and geographic calls. We observed that in any case, it was open to the MNOs to choose not to align their prices for 0845 calls with geographic rates if they wished to achieve at least as large a retention as on geographic calls. Despite it being inconsistent with our policy preference, we noted there was no regulatory obligation preventing MNOs from doing this.

Our approach in resolving the Disputes

3.13 In line with our approach in the 08x cases, we assess Principle 1 by comparing MNOs' average retention on calls to the affected number ranges to our estimates of the efficient cost of originating an NTS call from a mobile.[68] This is the test we considered relevant in the 08x cases but we did not apply it in exactly this form due to the data issues outlined above.[69] Where relevant, we also consider whether MNOs could recover the efficient costs of call origination by adjusting their retail prices in order to increase the level of retention they receive from calls to the affected number ranges under the NCCNs.

3.14 We consider that for Principle 1 to be met, the average retention on calls to the affected number ranges must, at a minimum, allow MNOs to recover the long-run incremental cost of call origination (i.e. the extra costs a mobile OCP incurs if it decides to originate these calls in addition to all the other traffic it carries).[70] In addition, we recognise that it may be appropriate for MNOs to obtain a level of retention on the affected number ranges that allows for some contribution to fixed and common cost recovery.

3.15 We therefore consider a range of cost benchmarks that vary in the extent to which they include a contribution to the recovery of fixed and common costs over and above the incremental cost of call origination. For the purposes of cost benchmarking, these fixed and common costs are often broken down into network and non-network costs, with non-network costs comprising admin/overhead costs and customer acquisition, retention and service ("CARS") costs. CARS costs themselves are often subdivided further into customer service costs (including the costs of billing and bad debt) and customer acquisition and retention ("A&R") costs.

[68] Average retention is calculated as the difference between the average retail price (excluding VAT) and the average wholesale termination charge applicable at that price under each NCCN. We consider that average retention should be based on a retail price that excludes VAT since VAT is not retained by the originating operator.

[69] Specifically, in the 080 Dispute we did not calculate average retention on 080 calls because we did not have data on average prices for 080 calls. In the 0845/0870 Dispute we compared average retention on calls to 0845 and 0870 numbers with average retention on geographic calls rather than an estimate of the cost of origination because we had not modelled origination costs at this point and because we had a strong policy preference for 0845/0870 calls to be priced at the same level as a geographic call.

[70] This definition is intended to reflect the same concept as the definition of pure LRIC in the 2011 Mobile Call Termination ("MCT") Statement (although in that document we referred to avoided incremental costs). See: http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT_statement.pdf.

3.16 In our NGCS review April 2012 consultation, we presented our estimates of a number of different measures of the cost to a mobile OCP of originating a 080/0500 call.[71] The measures we considered were:

- pure long run incremental cost ("LRIC"): the purpose of this measure is to estimate the incremental costs associated with originating calls to the relevant number range;

- LRIC differential: under the NTS call origination obligation, BT receives a fixed origination payment for 080 calls that exceeds its incremental costs. The concept behind the LRIC differential is that it identifies the level of cost mobile OCPs would need to cover in order to make the same pence per minute contribution to their fixed and common costs as BT receives from 080 calls. An equivalent way of thinking about this cost measure is that the origination payment received by fixed OCPs for 080 calls is uplifted to reflect the extra incremental costs associated with mobile call origination;

- LRIC+ (no A&R costs): Conceptually, the purpose of the LRIC+ measure is to estimate the average cost of originating traffic when using an all network traffic increment.[72] Unlike the pure LRIC approach, it includes a contribution to costs that are fixed and common with traffic other than 080/0500 calls. This measure allows a contribution only to network costs, admin/overhead costs and customer service costs, and it excludes A&R costs;

- LRIC+ (50% A&R costs): This measure includes a contribution to 50% of A&R costs in addition to network costs, admin/overhead costs and customer service costs; and

- LRIC+ (100% A&R costs): This measure includes a contribution to 100% of A&R costs in addition to network costs, admin/overhead costs and customer service costs.

3.17 The estimates are summarised in Table 3.1 below. Further detail on their calculation is available in the NGCS review April 2012 consultation. In the responses to that consultation we received comments on these cost estimates, which we are currently considering in the context of that review. Nevertheless we use these estimates as the best evidence currently available for the purpose of the Disputes and we note that our Provisional Conclusions on Principle 1 are in any case unlikely to change even if there were material amendments to these cost estimates.

[71] In the Consultation, we present two sets of estimates- one which assumes the 080 range is free-to-caller and the other which assumes it is subject to a maximum mobile price limit. We use the estimates relating to the maximum mobile price limit in our assessment of Principle 1. We consider these estimates to be more relevant than the free-to-caller estimates because the NCCNs in dispute relate to NTS numbers for which, on average, all the MNOs currently charge a non-zero retail price.

[72] This cost measure is similar to a fully allocated cost approach.

Table 3.1: Measures of mobile call origination costs (2013/14 charges in 2011/12 prices)[73]

Cost measure	Costs included	Estimated cost
Pure LRIC	Incremental costs only	0.7ppm-0.8ppm
LRIC differential	Incremental costs plus same ppm contribution to fixed and common costs that fixed OCPs receive from 080 calls	1.1ppm-1.2ppm
LRIC+ (no A&R costs)	Incremental costs plus a contribution to network costs, customer care costs, billing and bad debt costs, and other customer service costs (i.e, no A&R costs).	2.4ppm
LRIC+ (50% A&R costs)	As above but with a contribution to 50% of A&R costs	3.2ppm
LRIC+ (100% A&R costs)	As above but with a contribution to 100% of A&R costs	4.0ppm

Source: NGCS review April 2012 consultation, Part C – Annexes Table A22.1

Principle 2: Effects on consumers

3.18 Principle 2 requires that the proposed charges should provide an overall benefit to consumers. We assess the overall benefit to consumers under each of the NCCNs in dispute based on the following factors:

1. *Direct effect*: impact of the proposed WTCs on MNOs' retail prices for those NTS calls;
2. *Mobile Tariff Package effect*: impact of the proposed WTCs on MNOs' retail prices for other mobile services;
3. *Indirect effect*: impact of the proposed WTCs on SP revenue, and through improved services, on callers; and
4. *Competition effect:* impact of the proposed WTCs on competition, whether beneficial or detrimental.

[73] Inflation values from the 2011 MCT model have been used to convert costs to 2011/12 prices. The 2011 MCT model assumes forecast inflation of 2.5%. Pure LRIC and LRIC differential are shown with ranges due to uncertainty around the level of incremental non-network costs.

3.19 These factors are considered in our assessment of whether the proposed charges provide an overall benefit to consumers. In conducting this assessment, we have regard to the definition of consumers under the 2003 Act, which in the context of these disputes includes mobile callers (both those who make mobile calls to the affected number ranges and mobile subscribers more generally) and SPs.

3.20 As in the 08x cases, we do not have regard to any impact the NCCNs may have on the profits made by either BT or the MNOs in our assessment, except to the extent these have an impact on consumer welfare. We note that the CAT considered appropriate our view that these profits should not be included in our welfare assessment for the 08x cases.[74]

3.21 We consider how changes in MNOs' profits could impact upon consumers in our discussion of the MTPE. We recognise in theory that an increase in BT's profits under the NCCNs could lead to an improvement in its own retail offering, to the benefit of its customers (this was referred to as a fixed tariff package effect, or FTPE in the 0845/0870 Dispute). In the 0845/0870 Determination we suggested that the significance of any such FTPE was less certain than either the MTPE or the Indirect effect because BT did not appear to have a clear incentive to pass on any increase in profits made from terminating NTS calls to its retail customers.[75] As a result we do not consider this effect further.[76]

3.22 The formulation of Principle 2 has been refined since the 08x cases in order to clarify that our assessment of the impact of the NCCNs on competition is one of the factors we consider in order to reach a view on whether the proposed charges are beneficial to consumers. This change addresses the question raised by the CAT in its consideration of the 08x cases as to whether we intended to consider effects on consumers and competition in the round or whether detriments from either would be sufficient to fail the test.[77]

Direct effect

3.23 The Direct effect refers to the impact of BT's NCCNs on MNOs' retail prices for calls to the affected number ranges. Consumers who call these numbers would benefit directly from any reduction in these retail prices induced by BT's NCCNs.

3.24 The direction and magnitude of the Direct effect depends on whether it is more profitable for an MNO to increase, decrease, or maintain its existing retail prices for calls to the affected number ranges following the introduction of BT's NCCNs. This is likely to depend to a significant degree on the impact of BT's NCCNs on the profits earned by the MNO from calls to the affected number ranges, which will be

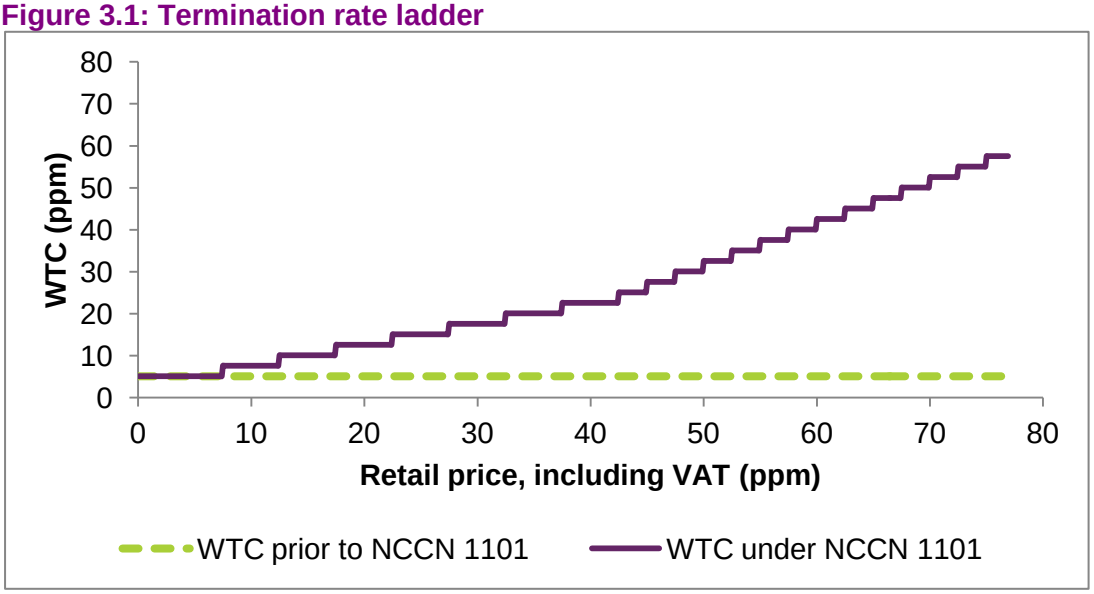
[74] CAT Judgment, see paragraph 348.
[75] The 0845/0870 Determination, see paragraphs 7.49-7.54.
[76] We note that the mechanism for BT to pass on a proportion of any increase in termination charges to its SP customers is, by contrast, far clearer- an increase in termination charges makes it more attractive to win additional SP customers, so BT has incentives to compete harder for their custom by offering a higher revenue share. We consider this effect in relation to the Indirect effect.
[77] CAT Judgment, see paragraph 440(1).

determined by both the MNO's retail margin on each call and the volume of calls it originates to these numbers.[78]

3.25 As noted in Section 2, all of the NCCNs in dispute set out tiered termination charges whereby the charges payable to BT for terminating calls to the affected number ranges increase in a series of steps as the OCP's retail price increases. This type of wholesale termination charge, which is commonly referred to as 'ladder pricing', is illustrated in Figure 3.1 with an example from NCCN 1101 (we discuss the key features of the individual NCCNs in detail in Sections 4, 5 and 6).

3.26 In Figure 3.1, the termination charge that applies on the bottom rung of the ladder is equal to the termination charge that applied before the introduction of BT's NCCNs. This is an important feature that is common to all of the tiered termination schedules in BT's NCCNs.

Figure 3.1: Termination rate ladder



3.27 There are two important features of these NCCNs which influence the magnitude and direction of the Direct effect:

(i) First, the NCCNs give rise to a significant increase in termination rates payable to BT at the MNOs' current retail prices for calls to the affected number ranges. On its own, this provides an incentive for MNOs to increase the price of calls to the affected number ranges in order to pass on some of the increase in termination charges to callers; and

(ii) Second, the ladder structure of the NCCNs mean that BT's termination rate increases in a series of steps as the retail price of a call increases. This feature will tend to reduce the incentive for an MNO to increase its retail prices for calls to the affected numbers if doing so would involve moving up one or more steps on the termination ladder and thereby lead to an increase in termination rate. In

[78] The retail margin on a call is the retail price (excluding VAT) minus origination cost and minus the applicable wholesale termination charge.

addition, the NCCNs may also give MNOs an incentive to reduce retail call prices to the affected numbers in order to move down one or more steps on the termination ladder and so benefit from a lower termination rate.

3.28 Overall, the direction and magnitude of the Direct effect will depend on both the responsiveness of call volumes to changes in retail price, and on the structure of the NCCN. In relation to the former, the NCCNs are likely to give rise to a stronger incentive to reduce retail call prices to the affected number ranges if the demand for calls to these numbers from an MNO's customers is more price sensitive. This is because an MNO would benefit from higher call volumes as well as a lower termination charge by reducing its retail price, and the incentive to reduce retail price will therefore tend to dominate. On the other hand, if call volumes are not particularly sensitive to a reduction in the retail call price (i.e. any increase in call volume is more limited), then there will be a weaker incentive to reduce the retail price (and possibly even an incentive to increase the retail price).

3.29 In general, we would expect to see a reduction in MNOs' retail prices for calls to the affected number ranges to result in some increase in call volumes i.e. for demand to be at least somewhat price sensitive. However, we recognise there are some features of the NTS market, notably low price transparency and a resulting lack of consumer price awareness, which may limit the impact of a reduction in retail call prices on the demand for calls to the affected numbers by mobile customers.

3.30 The second key consideration influencing the direction and magnitude of the Direct effect is the structure of the NCCN. 'Steeper' termination charge schedules, i.e. those where termination charges increase more rapidly in response to increases in the retail price, can be expected to give rise to a stronger incentive to reduce retail prices for calls to the affected number ranges.[79] This is because the incentive to increase retail price is weaker when doing so incurs a larger increase in termination charge and therefore results in a smaller increase in margin. Equally, there is a stronger incentive to reduce retail prices if this results in a larger reduction in termination charge.

3.31 In the extreme, if the termination charge increased at the same rate as the retail price (excluding VAT), then any increase in retail price would be likely to lead to a reduction in overall profits.[80] Such a wholesale tariff schedule would not be a ladder of charges but would be a straight line along which the MNOs retention on calls to the affected number ranges is constant (referred to as the constant retention line).[81] Under this schedule the MNO would see no increase in margin following an increase in retail price, but it would experience at least some reduction in call volumes (assuming demand for NTS calls is responsive to a reduction in the retail price). To

[79] Termination charge schedules can be made steeper by increasing the height of steps, by reducing the length of steps, or by a combination of the two.
[80] Although wholesale tariff schedules contained in the NCCNs in the Disputes are specified in terms of retail prices including VAT, MNOs do not retain VAT.
[81] The call retention is equal to the retail call price (excluding VAT) less the wholesale termination charge. Along the constant retention line the wholesale termination charge increases one for one with the retail price (excluding VAT).

the extent that demand is responsive to a reduction in retail price, there is therefore a clear incentive for MNOs to reduce retail price down to the bottom of this schedule.[82]

3.32 If the tariff schedule lies above the constant retention line, there is a clear incentive for MNOs to reduce retail price down to the bottom step irrespective of the nature of demand for NTS calls. Figure 3.2 below illustrates such a schedule. However if the schedule does not lie above this line, the direction and magnitude of the Direct effect will depend on the interaction between the structure of the NCCN and the nature of demand for NTS calls (in particular, how sensitive call demand is to retail call price).

Figure 3.2: A wholesale tariff schedule with clear incentives to reduce retail price down to the bottom step

3.33 Finally we note that the benefits of the Direct effect may not be limited to the reduction in the price paid by mobile subscribers who call the affected number ranges. We discuss the potential for additional benefits from the Direct effect, which we refer to as externalities, in more detail in our discussion of the overall welfare effect in paragraph 3.99. We note here that a reduction in the price of calls to the affected number ranges may in principle help to alleviate some of the problems of suppressed or distorted demand which we identified in our review of NGCs. It may also lead to an improvement in SPs' investment incentives by aligning prices more closely with SP preferences and/or by bringing about an increase in the volume of calls to the affected number ranges. We consider each of these potential effects in our weighting of the Direct effect.

[82] If the WTC increased more rapidly in response to increases in the retail price excluding VAT, then any increase in retail price would lead to a reduction in overall profits even if demand for NTS calls were completely unresponsive to price. This is because any increase in retail price would lead to a reduction in margin in addition to any reduction in call volumes. As a result, there would be a clear incentive for MNOs to reduce retail price irrespective of the nature of demand for NTS calls.

The 08x cases

3.34 In the 080 Dispute, we assessed the Direct effect by considering the likely impact on MNOs' retention on 080 call volumes from an increase in the retail price of 080 calls under NCCN 956. We found that average retention generally increased with retail price, which on its own created incentives for MNOs to raise retail prices. We then considered whether a higher call price might deter some calls from being made and so act as a disincentive to increase price. Submissions from the MNOs suggested that call volumes were likely to be relatively unresponsive to changes in call prices, which we found suggested this disincentive might be weak. As a result, we did not consider NCCN 956 would necessarily lead to a reduction in price.[83]

3.35 In the 0845/0870 Disputes, we drew on the understanding we had developed in the course of the 080 Dispute. This included an assessment of the MNOs' retention, similar to that conducted in relation to the 080 Dispute described above. We supplemented this assessment with the use of two theoretical frameworks developed by BT for assessing the Direct effect in the context of the 080 and 0845/0870 disputes (referred to respectively as the Dobbs and Reid models). We applied these models to the NCCNs in the 08x cases in order to investigate their implications in this context. We concluded these models were relevant for determining the likely direction of the Direct effect but not for generating specific price predictions given their sensitivity to assumptions that were inherently uncertain.

Our approach in resolving the Disputes

3.36 To analyse the Direct effect in the Disputes, we propose to follow a similar approach to that taken in the 08x cases. This approach includes an assessment of the structure of the NCCN in question and a consideration of the potential demand response to any retail price adjustment in the number range(s) affected by that NCCN. In a similar manner to the 08x cases, we supplement this analysis with a more theoretical assessment of the possible direction and magnitude of the Direct effect. This theoretical assessment is based on a version of the model put forward by BT in the 08x cases (referred to in the 08x cases as the Dobbs 3 model), modified to apply to the circumstances of the Disputes. We refer to this model as the "modified Dobbs model" (see Annex 3 for details).

3.37 In applying this model, we note that we assume that all other TCPs implement tiered termination charges identical (or at least very similar) to BT's (see paragraphs A3.13-A3.17). As a result, our assessment of the possible impact of BT's NCCNs on MNO profits from calls to the affected number ranges and TCP revenues assumes that all TCPs will make the same, or very similar, increases in termination rates as BT.

3.38 The modified Dobbs model aims to identify the retail price for calls to the affected number ranges that would maximise an MNO's profits following the introduction of the new termination rates, based on assumptions about the cost of origination, the nature of demand for NTS calls, and the way in which MNOs compete and set prices.

[83] In the 080 Dispute, we concluded NCCN 956 would not necessarily lead to a reduction in retail price (see Determination, Paragraph 1.24(ii). BT appealed this conclusion and we subsequently accepted that NCCN 956 was more likely to lead to a price reduction of uncertain magnitude. The CAT considered our finding on the Direct effect as articulated in the 080 Determination to be incorrect (CAT Judgment, paragraphs 342-344).

Our modified Dobbs model follows BT's Dobbs 3 model in looking at the profit earned by each MNO from calls to the affected number ranges in isolation.

3.39 We recognise that in principle retail prices for calls to these numbers may affect the demand for other mobile services, for example by affecting demand for other types of calls or via a 'spillover effect' on subscription demand. However, in the 0845/0870 Determination we found that the available evidence did not suggest that cross-price effects were likely to be large.[84] We have not seen evidence in relation to the Disputes which is in our view sufficient to enable us reasonably to revisit this finding. Indeed the evidence we have seen from consumer surveys conducted to inform our NGCS review consultation suggests that consumers tend to have very low price awareness for calls to these number ranges, and as a result do not take the prices of these calls into account when choosing which MNO to take out a subscription with.[85] We also think it unlikely that a change in the price of calls to the affected number ranges would lead to any material change in demand for calls to geographic or mobile numbers and have not seen any evidence to suggest otherwise. As a result, we consider the modified Dobbs model more relevant to our assessment of the Direct effect than other variants of the Dobbs model which allow for cross-price or spillover effects.

3.40 We think it relevant to our application of the modified Dobbs model that the magnitude of price changes it predicts tends to be sensitive to the assumptions made about the nature of demand. We have not seen empirical evidence which is in our view sufficient to conclude that the extent to which the demand for calls to the affected number ranges by an MNO's customers is likely to be sensitive to reductions in the retail prices for these calls. However, as noted above in paragraph 3.29 we consider that there are some features of the NTS market that may limit the extent to which a reduction in retail call prices leads to a significant increase in call volumes to the affected number ranges.

3.41 More fundamentally, we recognise that the modified Dobbs model is a stylised representation of reality and may not accurately reflect the basis on which MNOs make their pricing decisions in practice. As a result of this considerable uncertainty, we do not rely on the precise predictions generated by the model. Instead, we use the model to explore the likely direction of the Direct effect by considering a range of scenarios in relation to the nature of demand for NTS calls, MNOs' marginal cost of origination and initial retail prices. These assumptions and our interpretation of results from the modified Dobbs model are described in more detail in Annex 3.

3.42 Finally we note that there is uncertainty over the duration of any benefits arising from the Direct effect as a result of the possibility of significant changes to the NTS market flowing from the NGC review. As noted at paragraphs 2.29-2.32, in the April 2012 NGCS review April 2012 consultation we set out detailed proposals for regulatory intervention in relation to the pricing of NTS calls, including:

- the unbundled tariff remedy, which would require the retail price for NTS calls to be presented as two components- the Access Charge, set by the OCP to cover

[84] See 0845/0870 Determination, paragraph 9.21(b). We also found that the spillover effect was unlikely to be strong, see paragraphs 8.45 and 8.68.

[85] See NGCS review April 2012 consultation, in particular paragraphs 4.38 and 4.39 for a summary of evidence on this point and for further detail see paragraphs A8.39-A8.44, A8.93-A8.94, A8.117-A8.118, A8.332 and A8.334.

costs of origination, and the Service Charge, set by the TCP/SP to cover costs of terminating the call and providing the service; and

- the Freephone remedy, which would require OCPs to zero-rate calls to 080 numbers and for TCPs to provide OCPs with a fair and reasonable origination payment to cover their efficiently incurred costs of origination.

3.43 Under these proposals, TCPs would no longer be able to charge OCPs a different termination rate based on the retail price set by the OCP. If introduced, they would therefore put a natural expiry date on the NCCNs in dispute and, by extension, on any consumer benefits flowing from the Direct effect. Our current expectation is that these measures could be in place by sometime in 2014.

Mobile Tariff Package Effect

3.44 The Mobile Tariff Package effect ("MTPE") refers to the impact of the proposed WTCs on the prices paid by consumers for mobile services other than calls to the NTS number ranges that are affected by the proposed WTCs. These include elements of the bundle of mobile services purchased when consumers subscribe to an MNO or MVNO (e.g. for handsets, geographic calls, or data services) and reflect the fact that MNOs may increase the price of other services as a result of the change in WTCs. As explained below, BT's NCCNs can be expected to result in higher prices for mobile services other than calls to the affected number ranges through the MTPE, to the detriment of mobile customers.

The 08x cases

3.45 In the 0845/0870 Dispute, we found that the MTPE is a forseeable and predictable consequence of BT's tiered termination rates and identified two potential ways in which it could occur: [86]

- through a waterbed effect in the context of a 'competitive bottleneck'; and

- through relationships between consumers' demand for calls to the affected NTS number ranges and other mobile services.

3.46 The first way in which the MTPE might arise is through a waterbed effect in the context of a competitive bottleneck for calls to the affected number ranges. In this context, a competitive bottleneck would exist if calls to the affected numbers ranges face weaker competitive constraints than other mobile services. In this setting, an MNO would set prices for calls to NTS numbers (the bottleneck service) independently of prices for its other services, and would do so to reflect the limited competitive constraints. By contrast, each MNO would face competition on the other mobile services that it offers and profits earned on the bottleneck service would be competed away in lower prices for the competitive services.

3.47 A reduction in the profits on the bottleneck service (for example as a result of an increase in the termination charge) can be expected to lead to higher prices for other mobile services for the competitive services because it is no longer profitable to offer such low prices for these services. This is analogous to the waterbed effect in mobile

[86] The 0845/0870 Determination, see paragraphs 5.169-5.175.

termination. In the 0845/0870 Dispute, Ofcom considered it likely that the MTPE is at least as complete as the waterbed effect in mobile call termination.[87]

3.48 The second way in which the MTPE could arise is if the demand for calls to the affected number ranges and the demand for other mobile services are interdependent. Such demand interdependencies could arise, for example, if calls to the affected number ranges are complements or substitutes for other mobile services (e.g. geographic calls). Alternatively, the relationship between the price of calls to the affected NTS number ranges and the demand for other services faced by an individual MNO may reflect competition between MNOs.[88] If such demand interdependencies exist, then a change in MNOs' retail prices for calls to the affected number ranges (for example as a result of an increase in the termination charge) may result in a change in the demand for other mobile services, and hence induce MNOs to change the prices of these other services.

3.49 In the 0845/0870 Dispute, we found that the MTPE was likely to have an adverse effect on mobile consumers through higher prices for mobile services other than 0845/0870 calls, although its precise speed and scale was uncertain, as this would depend on the magnitude of the Direct effect, and also MNOs' pricing decisions.[89]

3.50 Ofcom considered the strength of the waterbed effect In the NGCS review April 2012 consultation and found that *"...it is likely that the Tariff Package Effect exists and is significant, but it is unlikely to be complete. This is consistent with the academic literature and previous decisions made by Ofcom, the Competition Commission and the CAT."*[90] Similarly, in the 2011 MCT statement, our view was that the waterbed effect was strong, but that it is unlikely to be complete.[91]

3.51 In its consideration of the 08x cases, the CAT stated: "*Reaching any kind of conclusion as to the extent of the Mobile Tariff Package Effect is thus extremely difficult. Basing ourselves mainly on the evidence of Professor Valletti, we find that the waterbed effect in the present case would be significant, but otherwise impossible to quantify. We should say that by significant we do not mean to suggest that the Mobile Tariff Package Effect would exceed 50%. It may do, it may not – we simply do not know*."[92]

3.52 In the Competition Commission ("CC")'s Determination in the appeals of Ofcom's decision on mobile termination charge caps in 2012, the CC agreed with Ofcom's

[87] The 0845/0870 Determination, see paragraph 7.147.
[88] This could be the case, for example, if a high price for a particular service would result in an MNO losing subscribers to rivals in order to obtain a cheaper overall bundle of services. In this case, the price increase on the service in question would result in a reduction in the MNO's demand for other services as a result of customer switching.
[89] The 0845/0870 Determination, see paragraphs 9.24-9.26.
[90] Paragraph A8.363, http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geographic-no/annexes/Annexes8-15.pdf.
[91] See: http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT_statement.pdf for example, paragraphs 5.7, 7.52, 8.49.2, and 10.34.1.
[92] CAT Judgment, see paragraph 364.

view of a strong but incomplete waterbed effect on the basis of the evidence available.[93]

Our approach in resolving the Disputes

3.53 We consider that the MTPE is a forseeable and predictable consequence of BT's tiered termination rates which we should take into account in our assessment of Principle 2. In particular, we think it is plausible that the MTPE will operate via a waterbed effect in the context of a competitive bottleneck for calls to the affected number ranges. Limited consumer price awareness for calls to NTS numbers means competition in these number ranges is weak, whereas competition for other mobile services, where prices are far more visible to consumers, is strong.

3.54 All of the NCCNs in dispute represent a significant increase in termination rates payable by the MNOs at existing retail prices for calls to the affected number ranges. As a result, the NCCNs can be expected to result in a substantial reduction in the profits made by the MNOs on calls to the affected number ranges, and hence are likely to lead to an increase in retail prices for other mobile services through the MTPE.[94]

3.55 As noted above, the MTPE could also arise as a result of interdependencies between the demand for calls to the affected numbers and the demand for other mobile services. However, as discussed at paragraph 3.39, we have not seen evidence which we consider is sufficient for us to conclude that such demand interdependencies are likely to be material.

3.56 We assess the potential scale of the MTPE by considering the possible impact of BT's NCCNs on MNO profits from calls to the affected number ranges. For this purpose, we consider it relevant to use our results from the modified Dobbs model to illustrate the potential reduction of MNOs' profits from calls to the affected number ranges, since this takes into account the possibility that the NCCNs induce a change in MNOs' retail prices for these calls (and hence the termination charge payable).

3.57 The relationship between the impact BT's NCCNs on MNOs' profits and on the price paid by subscribers for other mobile services depends on the strength of the

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[93] See: http://www.competition-commission.org.uk/assets/competitioncommission/docs/appeals/telecommunications-price-control-appeals/final_determination.pdf, paragraph 2.595.

[94] We considered the balance of prices between NTS calls and other services in our NGCS review April 2012 consultation, where we found that the current structure of prices was unlikely to reflect consumer preferences. This was because the lack of transparency and resulting lack of consumer price awareness for calls to NTS numbers meant that incentives for OCPs to compete with one another on retail prices for NTS calls were limited. In contrast, we considered that incentives for OCPs to compete on the more visible aspects of their retail offering were strong. As a result, we considered the lack of price transparency in the NTS market could create incentives for OCPs to set inefficiently high tariffs for NTS calls in order to subsidise tariffs for those services with a greater degree of transparency that are therefore subject to stronger competition. We note this in the context of the NCCNs in dispute because we recognise that a reduction in NTS retail price may be beneficial for consumers if it results in a structure of prices that is better reflective of consumer preferences. On the other hand, an increase in termination charges with no reduction in NTS retail call prices represents a transfer of money from mobile subscribers to BT without any beneficial rebalancing of tariffs and as such is clearly detrimental to consumers. We also distinguished such rebalancing of prices that arose in the context of higher termination charges (i.e. above the bottom tier on any of the NCCNs) in the 0845/0870 Determination (see paragraphs 8.150-8.154). We stress it is not necessarily the case that any rebalancing of tariffs resulting from the NCCNs in dispute is beneficial for consumers, if it arises in the context of higher termination charges.

waterbed effect. On the basis of the available evidence, we consider that the MTPE is likely to be significant but incomplete. However, the precise speed and scale of the MTPE is uncertain and will depend on the structure of the NCCN, the magnitude of the Direct effect, and also MNOs' pricing decisions. We also note that, just as the duration of any benefits from the Direct effect may be limited by the implementation in the NTS market of the remedies we set out in the NGCS review April 2012 consultation, so could any harm from the MTPE be limited in duration.

3.58 To the extent that the waterbed is not complete, we recognise the MNOs will experience a reduction in overall profitability as a result of the Disputed NCCNs. In its submission, EE argues that this reduction in overall profitability will have a negative impact on the MNOs' ability to make investments that callers would value. EE does not outline the mechanism through which it would expect a reduction in profits from calls to the affected number ranges to impact its ability to invest. We recognise there are plausible mechanisms through which this could occur, e.g. if there are constraints on borrowing to fund profitable investments as a result of imperfections in the capital market. However, we have not seen any evidence to support their existence.

Indirect effect

3.59 The Indirect effect refers to the impact of BT's NCCNs on SPs' revenue, and, through any knock-on impact on service quality and availability, on consumers who call the affected number ranges. The impact of the NCCNs on SP revenue depends on both the increase in termination revenue BT obtains as a result of the NCCNs, and the extent to which BT passes on some or all of this increase to SPs. The benefits to those calling the affected number ranges will depend on how SPs respond to any increase in revenue, for example by improving the quality of services they offer in a way that benefits consumers.

The 08x cases

3.60 In the 080 Dispute, we recognised the potential for consumers to benefit if increased termination revenues were passed on to SPs. However, we also recognised there may be no incentive on BT to pass on the benefits of higher termination charges if other TCPs could not, or did not, match BT's increase in charges. We were concerned that BT's billing system was a barrier to other TCPs introducing similar termination charges to those set out in BT's NCCN, and hence we concluded there were unlikely to be any consumer benefits from the Indirect effect.

3.61 In the 0845/0870 Disputes, we found there to be three main factors affecting the scale of any Indirect effect:

- whether other TCPs can broadly replicate BT's charges;
- whether BT will pass on higher termination revenues to SPs, e.g. because of competition from other TCPs; and
- how SPs would be likely to respond to any such increase in revenues and if consumers would benefit as a result.

3.62 We noted there had been developments in the NTS termination/hosting market since the 080 Dispute which were relevant to our assessment of the Indirect effect. The most significant of these was that BT had adapted its billing system to address the barriers we had previously identified as preventing other TCPs from being able to

replicate BT's tiered termination charging structure. As a result, other TCPs had been able to introduce termination rates linked to OCPs' retail prices. We considered these changes meant there could be sufficient competitive pressure on BT to ensure some benefits were passed on over time to SPs, although we thought there was likely to be a delay before the effects of such competitive pressure were felt while TCPs made changes to their billing systems and contracts with SPs were re-negotiated.

3.63 We recognised that for callers to 0845/0870 numbers to benefit from the Indirect effect, it would also be necessary for SPs to react to increased revenue by improving the availability or quality of the services that they offer. The evidence available at the time suggested it was not clear this would occur. This was because we found that most SPs were likely to have chosen 0845 or 0870 numbers because of the call price they expected OCPs to charge callers rather than the revenue share available on these number ranges. As a result, we concluded that, while there may be sufficient competitive pressure on BT to ensure that some benefits would be passed on over time to SPs, it was not clear that those calling 0845/0870 numbers would necessarily benefit.[95]

3.64 The CAT observed in its consideration of the 08x cases that the Indirect effect was even more uncertain than the Direct effect because it depended on the increase in BT's termination revenue and the extent to which BT passed on increased termination revenue to SPs.[96] In considering the relative weight that should be placed on the Direct and Indirect effect, the CAT noted that 0845 and 0870 number ranges were not intended to provide SPs with significant revenue, and that significant revenue share would subvert the purpose of these number ranges. As a result, the CAT disagreed with our finding that revenue flow to SPs should be taken into account as a secondary consumer benefit, given the level of investigation the Indirect effect entailed. The CAT instead considered the Indirect effect to be so minor that we should not have taken it into account.[97]

Our approach in resolving the Disputes

3.65 In the context of the Disputes, we consider our findings in the 0845/0870 Dispute and the CAT's comments in its judgment apply to any NCCN affecting a non-revenue sharing number range(s). In summary, we recognise that TCPs in non-revenue sharing ranges may compete to attract SPs by passing through some of any increase in termination revenue (e.g. in the form of lower hosting charges) but consider there is significant uncertainty about whether SPs would respond to this by changing their behaviour to pass through benefits to callers since they are non-revenue sharing ranges. As a result of this uncertainty, which is in addition to the uncertainty surrounding the Direct effect (and therefore the extent of any increase in termination revenue), we agree with the CAT that the Indirect effect in non-revenue sharing ranges will not be material.

3.66 As a result, we do not think it relevant to consider the Indirect effect in relation to NCCN 1046 because this applies to 080, which is not a revenue sharing number range. In contrast, as discussed in Section 2, NCCNs 1101 and 1107 both relate to

[95] The 0845/0870 Determination, see paragraph 9.28.
[96] CAT Judgment, see paragraph 348.
[97] CAT Judgment, see paragraph 377.

revenue sharing number ranges. We therefore consider that it is relevant to assess the Indirect effect of these NCCNs.

3.67 We assess the potential scale of the Indirect effect in revenue sharing ranges by considering the following factors:

- whether other TCPs can broadly replicate BT's charges;
- whether BT and the other TCPs will pass on higher termination revenues to SPs, e.g. because of competition between TCPs; and
- how SPs would be likely to respond to any such increase in revenues and if consumers would benefit as a result.

3.68 The relationship between any increase in TCP revenues and the scale of the Indirect effect depends on the proportion of any increase in termination revenues that TCPs pass through to SPs. We understand that other TCPs are now able to broadly replicate BT's charges, and a number of TCPs have implemented tiered termination rates (see paragraphs 4.100-4.101). In the medium to longer term, we would therefore expect this pass-through rate to be high as a result of competition between TCPs, although the precise scale and speed of pass through is uncertain. As noted in relation to the Direct effect (see paragraphs 3.39 and 3.40), we are currently consulting on our proposals for the NTS market which, if implemented, would limit the time the NCCNs are in place.

3.69 We understand from BT that contracts between TCPs and SPs are typically negotiated annually, although some contracts can be considerably longer than this.[98] If the proposed NTS remedies are implemented, the incentives for TCPs to pass through higher termination revenues to SPs may therefore be affected by the short period that would follow between contracts being re-negotiated and the remedies coming into force. We recognise that some of the NCCNs have been effective for longer than others and take this into account in our assessment. We note that BT assumed a pass-through rate in its internal governance papers supporting NCCN 1107 of [✂]% to [✂]% for the year after implementation (allowing time for contract renegotiation).

3.70 There is also considerable uncertainty about the extent to which SPs would invest any additional revenues in improving service quality and availability, and about the extent to which callers would value these improvements.

3.71 We recognise the potential for callers to benefit from at least some of any additional revenue passed through to SPs in relation to revenue sharing number ranges affected by the NCCNs. Indeed, in our NGCS review April 2012 consultation we considered there was significant potential for investment in service quality and availability in the NTS number ranges that was currently being dampened by features of the NTS calls market.[99]

[98] BT's responses to Ofcom's questions 15 May.
[99] Paragraphs 8.41-8.43, http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geographic-no/summary/Partb.pdf.

3.72 The feature we identified as having a particular impact on investment incentives was SPs' lack of control over retail prices. We also observed that suppressed demand for calls to non-geographic numbers may be contributing to weakened incentives to innovate because some services, which would be viable if customers had more confidence in these numbers, were not currently attractive for SPs.

3.73 We also explicitly considered the incentives for SPs to improve service quality or availability if they obtained a larger revenue share. We observed that whilst a higher revenue share could enhance incentives to invest or innovate, there was also the potential for any additional revenues obtained in this way to be retained as profit rather than directed into improved service provision. As a result, we emphasised increased call volumes and increased SP control over retail prices as the main mechanisms through which our proposals would be likely to benefit innovation.[100] We consider these potential externalities in our weighting of the Direct effect (see paragraph 3.99) because they relate to retail price reductions.

3.74 We assess the potential scale of the Indirect effect by considering the possible increase in termination revenue from calls to the affected number ranges across all TCPs (assuming all TCPs implement tiered termination rates similar to the disputed NCCNs). For this purpose, we consider it relevant to use our results from the modified Dobbs model to illustrate the increase in TCPs' termination revenues from calls to the affected number ranges, since this takes into account the possibility that the NCCNs induce a change in MNOs' retail prices for these calls (and hence the termination charge payable). As with the other applications of the modified Dobbs model, we do not consider these calculations to be precise predictions about the increase in TCP revenue but simply an illustration of its possible scale under certain conditions. We note, however, that the benefits to callers could be significantly lower than the increase in SP revenues if SPs if do not invest the additional revenues in a way that callers value, or significantly higher if callers value any investment at more than its cost.

3.75 We recognise that SPs may also retain some or all of an increase in revenues rather than invest these in improved services to the benefit of callers. We also recognise that SPs are consumers under the 2003 Act. However we consider that it is appropriate in the light of our statutory duties and regulatory objectives to place more weight on the interests of mobile consumers (including callers to the affected number ranges) than SPs where the interests of the two groups are likely to be in conflict. In exercising our discretion in this way, we have also had regard to the narrower definition of 'consumer' in the EU Framework Directives, where that term is defined as *"any natural person who uses or requests a publicly available electronic telephone service for purposes which are outsider his or her trade, business or profession."*[101]

3.76 Accordingly, in the context of the Disputes, if the impact of the termination charges contained within an NCCN on callers in terms of the prices they pay for calls and packages is negative, but there are benefits accruing to SPs as a result of increased revenues, we do not consider that such benefits should be given equal weight as the detriment to callers when assessing the balance of consumer benefits. Where it is uncertain that the increased SP revenues will filter through to callers, we consider

[100] Paragraph 13.72, http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geographic-no/summary/Partb.pdf.
[101] Framework Directive, Article 2i.

that greater weight should be placed on the welfare impact on callers. In other words, if the NCCN has an adverse impact on callers, that is likely to be determinative unless it is clear that there are material SP benefits which will be passed on to callers.

Competition effect

3.77 We recognise that the NCCNs may influence competitive conditions. The promotion of competition, where appropriate, is one of our principal duties under section 3 of the 2003 Act, and we therefore consider that it is important to assess the potential impact of BT's NCCNs on competition. We do so by considering whether the NCCNs would be likely to have a beneficial or distortive effect on competition.

The 08x cases

3.78 In our analysis of the competition effect in the 08x cases, we considered the following elements of competition that we identified as potentially relevant to the overall effect of the NCCNs on consumers:

- competition among TCPs: We considered whether other TCPs could charge comparable termination charges to those set by BT, enabling them to compete effectively in providing services to NTS SPs;
- competition among transit providers: We considered whether the introduction of termination charges as specified by the NCCNs in the Disputes could lead to a distortion of competition between transit providers;
- competition among OCPs in retail services: We considered whether termination charges as specified by the NCCNs in the Disputes could lead to a distortion of competition between OCPs in the retail mobile market; and
- competition between MNOs in wholesale access and origination to MVNOs: We considered whether OCP specific termination charges based on the average retail price would lead to a distortion of competition between MNOs in wholesale competition for the hosting of MVNOs.

3.79 In the 080 Dispute, we found there were material barriers to other TCPs broadly replicating BT's tiered termination charges. However, BT subsequently made modifications to its billing system that allowed other TCPs to introduce charging structures based on the retail prices of the OCP. As a result, in the 0845/0870 Dispute we concluded that the ability of other TCPs to replicate BT's termination rate schedules implied the risk of a distortion of competition among TCPs in NTS hosting services was relatively low.

3.80 In the 08x cases, the issue of foreclosure in the transit market was raised by both MNOs and a major transit operator. However, we found there were no insurmountable barriers to implementing a ladder pricing methodology for transit operators. Nonetheless we had concerns about transit providers' ability to identify the OCP of some calls in order for them to be able to bill OCPs accurately (for example, when calls arrive via another transit provider who does not identify the OCP). We noted that BT (as the TCP) may be unable to determine the identity of the OCP if the call is from a ported number and the TCP is unable to identify the OCP based on the ingress route, such as because the call arrives via another transit provider who does not provide the OCP identity.

3.81 We were concerned that this could lead to competitive distortion in the transit market by encouraging OCPs to choose inefficient routing choices to avoid the payment of higher termination charges. Although the scale of this effect was uncertain, we maintained our concern about the risk of a distortion in the transit market in the absence of a mechanism to solve the problem regarding the ability to identify the OCP of the call.

3.82 In its judgment, the CAT disagreed with our assessment and considered the choice of transit provider was a potential problem of practicality rather than a serious competitive risk. We agree with this characterisation of the problem, and now consider choice of transit provider in relation to Principle 3 (Practicality).

3.83 We also considered whether the introduction of the NCCNs in dispute could affect the range of mobile packages available by making certain packages that include lower prices for calls to the affected number ranges uneconomic. However, we observed that this argument put forward by the MNOs does not take into account that there could be an incentive to retain lower-priced packages to avoid an increase in the MNOs' average retail price and potentially a higher termination charge paid to BT (although the nature of this effect depends on the method to derive MNOs' average retail price). Therefore, we did not place great weight on this potential concern.

3.84 Another possible concern related to uncertainty over BT's termination charges and future variations affecting MNOs' willingness to offer new and innovative tariffs. We recognised that certainty is important for business planning but noted that this issue is not unique to BT's termination charges for calls to the affected NTS number ranges. There was the potential for other OCPs to face uncertainty about termination charges, including the uncertainty faced by OCPs (such as BT) in relation to changes in mobile termination charges. In addition, the significance of this issue was likely to depend on the way in which the average retail price is derived and updated over time, and the frequency with which BT might change its termination charges.

3.85 We also considered whether a linkage between MNO retail prices and MVNO wholesale/termination charges could cause a distortion in the wholesale access and origination market. We found there might be ways in which MNOs could mitigate any such distortion, but more fundamentally observed that the size of any distortion depends on the importance of calls to the affected NTS number ranges to MVNOs, which account for a small proportion of total mobile-originated voice minutes. NTS calls in general constitute a small proportion of total mobile-originated calls, which may make any effects on competition in MNO hosting of MVNOs relatively small and/or short-lived. We therefore considered that any potential distorting effect may avoid *material* distortion to the incentives of MVNOs to switch between MNOs.

3.86 In responding to stakeholder comments in the 0845/0870 Dispute, we also considered the potential for the NCCNs to affect competition between fixed and mobile OCPs. In particular, we considered whether the MNOs could use profits earned on 0845/0870 calls to subsidise other services on which they competed with BT such as voice and broadband and, if so, whether this amounted to a material distortion in competition between fixed and mobile OCPs which might be mitigated by the NCCNs. We found this could only arise in relation to number ranges where regulation did not apply equally to all OCPs, which in the context of the 0845/0870 Disputes was only the case for 0845 calls. We then considered the profits earned on

0845 calls and found these were too small relative to the size of the voice and broadband markets to be likely to lead to any material distortion to competition.[102] As a result, we concluded there was no material distortion between fixed and mobile OCPs resulting from MNO profits on 0845 calls.

Our approach in resolving the Disputes

3.87 As discussed at paragraph 3.77, we consider that we should take account of the impact of BT's NCCNs on competition as part of our assessment of whether the NCCNs provide an overall benefit to consumers. In this regard, we consider that it is relevant to consider the potential for beneficial effects on competition of BT's NCCNs, as well as the potential distortion to competition as a result of the introduction of BT's NCCNs.

3.88 In the context of the Disputes, we are not aware of any changes in the market that would cause us to materially alter the conclusions we reached in the 0845/0870 Determination in relation to the competition effect. However, we have updated our finding in relation to the potential distortion in choice of transit provider to reflect the CAT's view in its Judgment that this effect was a potential problem of practicality rather than serious competitive risk.[103] We have also considered some new arguments made by the MNOs in relation to the competition effect, which we discuss in Sections 4 to 6 according to the particular NCCN with respect to which they were raised.

3.89 In addition, we have considered whether applying a stringent test to the introduction of price changes by BT could itself have a chilling effect on competition. In this context, we note that competition and innovation are not necessarily a good in themselves, regardless of whether they can be expected to operate to the benefit of any relevant consumer. Instead, we consider the relevant question in light of our statutory duties whether or not the NCCNs would lead to overall benefit to consumers. As a result, our conclusion on this potential competition effect would follow from the conclusion on the other parts of Principle 2. If we were to find the NCCNs likely to lead to overall benefit to consumers, we would consider them to be a beneficial form of competition between TCPs. However, if we were to find they could lead to consumer harm, we would not consider such competition or pricing innovation beneficial. This view is supported by the CoA's findings that competition is not an aim in itself but only if it benefits consumers[104] and that not all innovation is necessarily good in terms of competition or benefits to consumers.[105]

3.90 We have also considered whether the NCCNs could mitigate any distortion in competition between fixed and mobile OCPs resulting from MNO profits made on calls to the affected number ranges. We consider our findings in the 0845/0870 Disputes are relevant to the Disputes, and in particular do not consider the MNO

[102] This was in contrast to our findings in our review of MCT, where we concluded that if mobile OCPs were able to set excessive prices for MCT whilst fixed OCPs were only allowed to charge regulated prices, it could lead to a transfer of funds between fixed and mobile operators that would be capable of creating a material distortion to competition. In the 0845/0870 Determination, we recognised the parallel between our MCT findings and MNO pricing of 0845 calls, but observed that the scope for profit generation through unregulated MCT was much greater than 0845 calls (see paragraphs 7.75- 7.77 of the 0845/0870 Determination).
[103] CAT Judgment, see paragraph 389.
[104] CoA Judgment, see paragraph 86.
[105] CoA Judgment, see paragraph 88.

profits made on calls to the affected number ranges to be significantly large in relation to the size of the voice and broadband markets to create a material distortion to competition between fixed and mobile OCPs. We note that origination revenues made by MNOs on calls to the affected number ranges are similar, or lower than, the origination revenues they make on calls to 0845/0870 and therefore consider it reasonable to apply the same finding.[106]

3.91 Finally, we have also considered whether TCPs might use tiered termination rates to compete against one another to the benefit of consumers. In theory, we observe that TCPs could use tiered termination rates (or any other type of termination rate schedule) to offer a more attractive hosting service to SPs by:

- encouraging higher call volumes to the SP by incentivising a reduction in the retail price of calls to the SP's number; or
- giving SPs a higher revenue share by charging a higher termination rate.

3.92 In practice, we understand that the first channel is unlikely to be effective given MNOs' existing policies of setting retail prices for calls to NTS number ranges that do not vary according to the terminating provider. This means all TCPs would benefit from any reduction in retail price, reducing the competitive advantage to the TCP introducing tiered termination rates.[107] Whilst it is possible that the MNOs could seek to set a different retail price for calls to a particular number range depending on whose network the call is terminated, it is unclear that this would be practical. Furthermore, we would be unlikely to find this desirable given our findings in our review of the NTS market that tariff complexity was already contributing to a lack of consumer price awareness for NTS calls.[108] Any further increase in complexity by differentiating prices by TCP would be likely to compound this problem.

3.93 TCPs could also seek to use tiered termination rates to obtain increased termination revenue in order to offer a higher revenue share to SPs. Whilst this suggests that TCPs may have an incentive to introduce tiered rates that result in higher termination revenues to the benefit of SPs, it is unclear, however, that TCPs would have an adequate incentive to introduce tiered rates that are to the benefit of mobile customers. If BT maintained the disputed NCCNs, other TCPs may not have incentives to encourage further reductions in retail prices for the reasons outlined above. Instead, they may have incentives to increase their termination charges in order to offer a more competitive revenue share to SPs. Acting on these incentives may lead to the introduction of competing tiered rates that would serve to increase the MTPE without encouraging any off-setting Direct effect. Whilst there may be an Indirect effect resulting from higher SP revenues, we note in our discussion of the Indirect effect above that the pass-through of these benefits to callers is very uncertain. As a result, we do not consider such competition between TCPs would be likely to benefit callers.

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[106] In 2009, mobile origination revenues from calls to 0845 and 0870 numbers were £186m and £55m respectively. This compares with £69m for 0843/4, £72m for 0871/2/3, £75m for 080 and £74m for 09. See http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-numbers/annexes/flow-funds.pdf for more details.

[107] NGCS review April 2012 consultation, see paragraph A17.43.

[108] Paragraph A24.30, http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geographic-no/annexes/Part_CAnnexes.pdf.

Assessment of overall effect on consumers

3.94 The overall impact of the proposed WTCs on consumers depends on the various interactions and inter-relationships between the Direct effect, Indirect effect and MTPE, as well as the impact on competition.

The 08x cases

3.95 In the 080 Dispute, we found that NCCN 956 would not necessarily lead to a reduction in 080 retail call prices and hence that there would be a negative Direct effect.[109] As the MTPE was also negative, and the Indirect effect unlikely to be material given the inability of other TCPs to implement a similar charging structure to BT (and therefore the lack of competitive pressure on BT to pass through revenues to SPs), the overall impact on consumers was likely to be negative. We noted that if there was pass-through of revenues to SPs by BT, there was a risk of a distortion of competition among TCPs.

3.96 In the 0845/0870 Disputes, we found that the Direct effect was likely to be positive. In this case, we observed that the net impact on consumers would depend on the various interactions and inter-relationships between the Direct effect, Indirect effect and MTPE. We conducted a qualitative assessment of these interactions, assigning more weight to the Direct effect than the MTPE or Indirect effect as a result of the additional benefits to consumers from a price reduction in these number ranges over and above the benefit from paying a lower price for these calls. We found that, because we could not be certain about the magnitude of the likely price reductions, it was possible that the MTPE could outweigh the benefits to consumers from the Direct effect. In light of our over-riding statutory duties to further the interests of consumers, we placed greater weight on this potential risk to consumers. In relation to competition, we were concerned that the NCCNs could lead to distortions of OCPs' choice of transit provider. Taking these issues we had identified in relation to consumer benefits and distortions to competition in the round, we concluded that Principle 2 was not met.

Our approach in resolving the Disputes

3.97 We adopt a similar approach to assessing the consumer impact of the NCCNs in dispute to that taken in the 08x cases, namely drawing on our findings for the individual effects to overall assess their overall impact on consumers.

3.98 In conducting this assessment, we place less weight on the Indirect effect than the Direct effect or the MTPE. As discussed in relation to the Indirect effect, this is because we think its impact on callers is considerably more uncertain than the other effects, even in the revenue-sharing number ranges and we place more weight on the interests of callers than we do on SPs. In practice, this means that if the NCCN has an adverse impact on callers, that is likely to be determinative unless it is clear that there are material SP benefits which will be passed on to callers.

3.99 We also place more weight on the Direct effect than the MTPE. This reflects the fact we have identified certain externalities as potentially resulting from a reduction in the

[109] As noted at paragraph 343 of the CAT Judgment, the CAT concluded that the Direct effect was likely to be positive.

price of calls to the affected number ranges, as well as any policy preference, where relevant. These externalities are related to some of the adverse effects we found that certain features were having on the market for NTS calls in our NGCS review April 2012 consultation. The extent and scale of these externalities may vary with the number range under consideration as a result of differences between NTS number ranges. The possible externalities that we have identified are:

- alleviation of suppressed or distorted demand for calls to the affected number ranges through improving the meaning and value to consumers of the reputations of these number ranges; and

- improvement in SPs' investment incentives through the prices of calls to the affected number ranges being better aligned with SPs' preferences and/or an increase in the volume of calls to these numbers.[110]

3.100 As in the 08x cases, we consider there are some scenarios where we can be confident about the overall impact on consumers who call the affected numbers and on mobile customers:

- if retail prices of calls to the affected number ranges increase, consumers suffer harm through both the Direct effect and the MTPE (this reflects the fact that MNOs profits from calls to the affected numbers are likely to fall as a result of higher termination charges under BT's NCCNs which are unlikely to be fully recouped through higher call prices);

- if retail prices of calls to the affected number ranges are unchanged, there are no benefits from the Direct effect, but consumers suffer harm through the MTPE (this reflects the fact that MNO profits from calls to the affected numbers fall as a result of the increase in termination charges); and

- if retail prices of calls to the affected number ranges fall to the bottom rung of the termination ladder (referred to as the 'full price reduction scenario'), consumers benefit from the Direct effect, but suffer harm from the MTPE (this reflects the fact that MNO profits from calls to the affected numbers fall as a result of the reduction in retail prices alone – since there is no increase in termination charge). In this case, the MTPE would be exactly equal to the Direct effect if the loss to MNO profits on calls to the affected numbers is fully recaptured through price increases on other services (i.e. when the waterbed is 100%), if the reduction in retail call price has no impact on the volume of calls to the affected number ranges and if there are no positive externalities due to the reduction in call prices. In this scenario, we would expect the overall impact on mobile customers to be positive, given that the waterbed is likely to be less than 100%, call volumes to the affected number ranges are likely to be at least somewhat responsive to price and positive externalities are possible.

3.101 The other possible scenario is that prices fall but do not fall to the bottom rung of the termination ladder (referred to as the 'partial price reduction scenario'). In this case, it is possible that mobile customers could benefit overall if the Direct effect is

[110] This effect is distinct from the Indirect effect, which considers the impact that additional termination revenues passed through to SPs may have on SPs' incentives to invest in service quality and availability at given retail prices.

sufficiently large to offset the negative MTPE.[111] This is more likely to happen if the retail price reduction is large relative to the increase in termination rate, and hence will be more likely when demand is relatively responsive to price. Consumers are also more likely to benefit from a partial price reduction if the waterbed is small and externalities due to a reduction in call prices are large.

3.102 Where there is uncertainty as to the possibility of overall harm to consumers, in light of our overriding statutory duties to further the interests of consumers, we consider it appropriate to place greater weight on the potential risk of harm to consumers.

Principle 3: Practicality

3.103 Principle 3 concerns practicality. To be considered fair and reasonable, BT's proposed termination charges must be reasonably practical to implement.

3.104 In this section, we discuss how we analysed the question of practicality in the 08x cases and the views of the CAT and the CoA on this issue in the appeals associated with those cases. Any subsequent comments on practicality made by the parties are discussed in Sections 4 to 6, where we also set out our analysis of whether it is practical to implement the charges to which NCCNs 1011, 1107 and 1046 relate.

Ofcom's views in the 08x cases

3.105 In the 080 Dispute, we acknowledged the issues regarding practicality raised by the MNOs about the derivation of average retail prices and noted that "*it should be possible to reach a practical solution within the parameters that we have set out and this solution can be achieved through further commercial negotiation.*"[112] Ofcom noted it would be for MNOs in the first instance to provide an estimate of the average retail price subject to a verification procedure. If an MNO was unable to determine an average retail price, it was then for BT to estimate the price based on publicly available information. Details of the arrangements were subject to negotiations between the parties.[113] We concluded that Principle 3 should not be a barrier to the NCCN in dispute being considered fair and reasonable.

3.106 Similarly, in the 0845/0870 Disputes, we noted that each MNO should be in a position to estimate their own average retail prices for calls to the number ranges in dispute, to an acceptable degree of accuracy. We suggested that this should be subject to a reasonable verification process, although noted further negotiation would be required between the parties to agree how this would work.

3.107 We considered other issues introduced by the MNOs, which related to the risk of unintended, unforeseen or undesirable wider implications arising from the new pricing arrangements put in place by BT. We noted that the charging arrangements under consideration "*…might lead to unintended and unforeseen consequences*…"[114] due to the complexity of real-world pricing decisions faced by the MNOs, and that

[111] We recognise the Indirect effect is also present in this scenario, as there will be some increase in termination charges payable when prices do not fall to the bottom rung. However, given the lesser weight we place on this effect (see paragraph 3.95), in practice the direction of overall consumer impact is more likely to be determined by the relative magnitudes of the Direct effect and MTPE.
[112] The 080 Determination, see paragraph 6.11.
[113] The 080 Determination, see paragraph A3.63.
[114] The 0845/70 Determination, see paragraph 9.49.

"the potential for significant wider implications is also relevant to our consideration."[115]

3.108 We identified that a number of practical difficulties of implementation were unresolved (such as that porting at the OCP end may affect billing accuracy) and that tiered termination charges would introduce significant additional complexity (for example, the OCP is likely to be charged different ladders of termination rates by different TCPs). We went on to note "*the potential for a major and potentially disruptive set of changes to industry arrangements…*"[116] to result from the charges. However, we went to acknowledge that "*[i]f we were in a position to conclude that there were clear and unequivocal benefits to consumers…we might place less weight on the practicality concerns.*"[117] Given the conclusion that Principle 2 was not passed in relation to the 0845/0870 charges, Ofcom concluded that these practicality concerns were relevant and that there was insufficient evidence to conclude that it was practical to implement the new 0845/0870 charges.

The views of the CAT and CoA

3.109 In its consideration of the 08x cases, the CAT accepted that the imposition of the NCCNs in the 08x cases would involve some work by both BT and the MNOs in order to implement a new billing structure.[118] In addition, as noted at paragraph 3.88, we reflect the CAT's view that any potential distortion in choice of transit provider is a potential problem of practicality rather than a competitive risk (which we consider in the competition effect in Principle 2).

3.110 In its Judgment, the CAT believed some of the practical difficulties had been overstated.[119] The CAT considered that the issues raised such as calculations of the average retail price *"are precisely the sort of difficulties that the parties should be able to resolve between themselves."*[120] In respect of any potential distortion in choice of transit provider, the CAT noted "*We do not regard it as so serious a competitive risk as to prevent BT from imposing its NCCNs."*[121]

3.111 Overall therefore, the CAT considered appropriate the conclusions which Ofcom drew in the context of the 080 Determination, that is, the principle is satisfied and the charges should be reasonably practical to implement.

3.112 In resolving the appeals brought to it regarding the 08x cases, the CAT issued a Judgment, Order and Ruling. We consider that the CAT order is relevant to our discussion regarding practicality. The CAT Order set out actions required by Ofcom and the parties (the MNOs and BT) which gave effect to its decisions in the Judgment and Ruling. The Order required Ofcom to determine that the NCCNs in the 08x cases stand and that the MNOs make payments to BT. If the MNOs and BT could not agree on the amount of payments, the Order required that Ofcom order

[115] The 0845/70 Determination, see paragraph 9.50.
[116] The 0845/70 Determination, see paragraph 9.52.
[117] The 0845/70 Determination, see paragraph 9.52.
[118] CAT Judgment, paragraph 401.
[119] CAT Judgment, paragraph 402.
[120] CAT Judgment, paragraph 408.
[121] CAT Judgment, paragraph 389.

such payments as it considered appropriate.[122] We issued a determination which gave effect to directions in the Order and reflected the agreements made as between BT and each of H3G, O2 and EE regarding payments for monies owed under the NCCNs as a result of the CAT's decision that the charges were fair and reasonable. Vodafone and BT failed to agree the payment due to BT.[123] Accordingly we ordered the appropriate payment to be made by Vodafone.[124]

3.113 The question of whether the charges are practical was not an issue before the CoA in its examination of the 08x cases. The CoA noted that Ofcom's view regarding whether the charges were practical from the 080 Dispute (as noted at paragraph 3.105) prevailed and was therefore not an issue which was considered any further.[125]

Our approach in the Disputes

3.114 We consider that the fact the majority of MNOs were able to agree with BT the amounts owed under the CAT Order (even though we note the Order is no longer in place following the CoA Judgment) is relevant to our assessment of whether similar "ladder" charges are practical. Specifically, the payments agreed will have contained a calculation based, in principle, on an average retail price for calls to the affected number ranges. As a result, we do not consider difficulties in deriving average retail prices present a barrier to the disputed NCCNs being fair and reasonable.

3.115 In relation to the unintended, unforeseen or wider implications raised by the MNOs in the 08x cases, and any potential distortion in choice of transit provider, we remain of the view that the weight we attach to these potential practicality concerns depends on our findings in relation to Principle 2. Specifically, whilst we recognise there are potential practical consequences resulting from the NCCNs, we would place less weight on these consequences if we thought the NCCNs would lead to overall consumer benefit.

[122] Following this Order, Ofcom issued its first determination which gave effect to the directions in the Order which were capable of being implemented immediately. See: http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01076/determinations195.pdf

[123] http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01076/Determination270212.pdf

[124] Ofcom's decision has been appealed.

[125] CoA Judgment, see paragraph 40.

Section 4

Analysis and Provisional Conclusions for NCCN 1101

4.1 In this Section, we set out our analysis and provisional conclusions as to whether it is fair and reasonable for BT to apply the termination charges set out in NCCN 1101, using the analytical framework set out in Section 3.

4.2 This Section is structured as follows:

- first, we discuss the key features of NCCN 1101, and EE's pricing policy for calls to the number ranges affected by this NCCN;
- we then set out the parties' views, our analysis, and our provisional conclusions, against each of the three principles that form our analytical framework; and
- finally, we set out our provisional conclusions as to whether it is fair and reasonable for BT to apply the termination charges set out in NCCN 1101.

4.3 A number of the issues we consider in relation to NCCN 1101 are also relevant to NCCN 1107, and to a lesser extent NCCN 1046. As a result, some of the discussion material in this Section is also relevant to those NCCNs as well as NCCN 1101, and we indicate where this is the case as appropriate.[126]

Key features of NCCN 1101

Structure of the wholesale tariff schedules

4.4 NCCN 1101 contains a number of different wholesale tariff schedules that correspond to BT's retail price charge bands for the 0843/4 and 0871/2/3 number ranges covered by this NCCN.[127] The wholesale tariff schedule varies by charge band and also by time of day (i.e. daytime, evening and weekend).

4.5 NCCN 1101 specifies different wholesale tariff schedules for 13 charge bands with three time of day variants for each charge band. Hence there are in total 39 different wholesale tariff schedules for NCCN 1101.

4.6 As with all of the NCCNs in dispute, the bottom rung of each wholesale tariff schedule is set at the WTC that prevailed prior to the introduction of NCCN 1101. The WTC then increases with the OCP's retail price for calls to the affected number range in a series of steps indefinitely.

[126] Also, where EE has submitted evidence that is specific to NCCN 1107, but it makes sense to deal with it alongside evidence specific to NCCN 1101, we discuss it in this Section, rather than Section 5.
[127] Each of these charge bands corresponds to a particular retail price that BT charges its customers for making a call to a number in this range. An SP who purchases a hosting service from BT for one of these number ranges thus indicates its preferred retail call price.

4.7 For all of the schedules in NCCN 1101 the termination charge increase less rapidly than the retail call price excluding VAT.[128] As a result, the retention per minute (i.e. the retail call price excluding VAT minus the applicable termination charge) available to the MNO increases with each step.

4.8 Once a certain threshold retail price is reached, the steps become shorter so that the length of subsequent steps equals their height. This means that the termination rate increases one-for-one in response to an increase in the retail price. Because the wholesale tariff schedule is specified in terms of retail prices including VAT, which is not retained by the MNOs, the retention per minute available to the MNO declines with each further step. Therefore, the retention per minute is maximised at this threshold retail price. For all of the wholesale tariff schedules contained in NCCN 1101, the retail price at which retention per minute is maximised is 42.5 pence per minute ("ppm"), including VAT.

EE's pricing policy for calls to the affected number ranges

4.9 We understand from EE that it sets separate retail prices for each of its T-Mobile and Orange brands for calls to the number ranges affected by NCCN 1101. In addition, for each brand, EE sets a single retail price for calls to all of the 0843/4 BT charge bands covered by NCCN 1101, and a single retail price for calls to all of the 0871/2/3 BT charge bands covered by NCCN 1101. These retail prices apply at all times of day. EE explained that it does this partly to reflect consumer preferences for tariff simplicity and partly because of the costs to EE associated with more granular pricing. We refer to each of EE's retail prices as 'price points', to distinguish them from BT's charge bands. We understand that EE sets the level of each price point on the basis of [✂Description of confidential EE retail pricing policy✂].

4.10 EE provided the average retail price at each of the four price points (two for T-Mobile and two for Orange) covered by NCCN 1101, which applied immediately before NCCN 1101 came into effect. EE's price points under NCCN 1101 are summarised in Table 4,1 below.

Table 4.1: EE's price points covered by NCCN 1101, ppm

Price point	T-Mobile average retail price (incl. VAT)	Orange average retail price (incl. VAT)
All 0843/4 charge bands	[✂]	[✂]
All 0871/2/3 charge bands	[✂]	[✂]

Source: EE response to Question 1 of the first s191 Notice NCCN 1101 and 1107 Disputes.

Principle 1: Cost recovery

4.11 To satisfy Principle 1, the WTCs should not deny MNOs the opportunity to recover their efficient costs of originating calls to 0843/4 and 0871/2/3 number ranges hosted on BT's network.

[128] The wholesale tariff schedule is specified in terms of retail prices including VAT, but this is not retained by the MNOs.

Views of the parties

EE's analysis

4.12 EE's NCCN 1101 and 1107 dispute submission contains an assessment of whether EE would be able to recover its costs of call origination under the new wholesale termination charges introduced in the NCCNs. EE's assessment is based on its retail prices remaining unchanged.

4.13 For both Orange and T-Mobile customers, EE calculates its ppm margin for the most significant charge bands (in terms of traffic volumes) on the 0843/4 and 0871/2/3 (and 09) number ranges, both before and after the introduction of the NCCNs in dispute. For the purposes of this analysis EE calculates ppm margins as the average retail price (including VAT) less BT's wholesale termination charge, and less the cost of call origination.

4.14 EE calculates the ppm margins on the basis of EE's VAT inclusive price to "*simplify the calculations*", but notes that the actual margin retained by EE will be lower as it will be net of VAT on these prices.[129]

4.15 EE uses a figure of 5ppm for the minimum efficient cost of mobile origination for calls to non-geographic numbers, noting that this is based on a LRIC+ cost standard. EE claims that this figure is supported by the CAT in its consideration of the 08x cases and was used by BT's expert witness Professor Dobbs in this context.[130]

4.16 EE's analysis shows that for all of the selected charge bands on the 0871 number range, the ppm margin is positive after the introduction of NCCNs 1101. However, EE finds that for two of the 0843/4 charge bands (g6 and g11), NCCN 1101 will result in EE not being able to recover its efficiently incurred costs at the current pricing level for Orange customers.[131] EE calculates that it will make a loss for all calls to the 0844 charge bands g6 and g11 of 2.1 ppm and 1.3 ppm respectively. EE further notes that these two charge bands account for over [✂]% of Orange traffic to the 0843/4 number range).[132]

4.17 EE acknowledges that it is open to it to increase its current pricing for these calls so that it no longer incurs a loss on these calls. However, it contends that *"the disincentive for EE to offer these low priced non-geographic calls created by NCCN 1101 is still in this case likely to operate to reduce pricing innovation and competition to the detriment of consumers, in violation of Ofcom's statutory objectives."*[133]

4.18 EE therefore considers that Principle 1 is not satisfied, and that Ofcom should find NCCN 1101 to be unfair and unreasonable.

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[129] EE's NCCN 1101 and 1107 dispute submission, Annex 9.1, footnote 89.
[130] EE's NCCN 1101 and 1107 dispute submission, paragraphs 3.2.8 and 3.17 and Annex 9.1, footnote 91.
[131] For the remaining charge bands on the 0844 number ranges, EE finds that the pence per minute margin is positive after the introduction of NCCN 1101.
[132] EE 's NCCN 1101 and 1107 dispute submission, paragraph 3.18. We assume that the reference to the 0843/4 charge band "g7" in paragraph 3.16.1 is a typographical error, which should in fact refer to "g11".
[133] EE's NCCN 1101 and 1107 dispute submission, footnote 54.

BT's comments on EE's analysis

4.19 BT submitted some comments by Professor Dobbs on the impact of NCCNs 1101 and 1107 contained in EE's NCCN 1101 and 1107 dispute submission.[134] This includes some comments on the marginal cost of origination used by EE in its analysis. However, our understanding is that these comments properly relate to the assessment of the Direct effect under Principle 2, rather than the assessment of cost recovery under Principle 1.

Our views

4.20 As discussed in Section 3, we assess Principle 1 by comparing EE's retention on calls to the affected number ranges under NCCN 1101 at EE's current retail prices.

4.21 As explained above, EE sets retail prices separately for T-Mobile and Orange calls to the two number ranges affected by NCCN 1101. In addition, for each brand, EE sets a single retail price for calls to all of the 0843/4 BT charge bands covered by NCCN 1101 (applicable at all times of day), and a single retail price for calls to all of the 0871/2/3 BT charge bands covered by NCCN 1101. These retail prices apply at all times of day. In view of this, we think it is appropriate to assess Principle 1 by calculating the average retention that EE earns at each T-Mobile and Orange price point within the affected number ranges. [✂].

4.22 For each price point, we calculate average retention by subtracting from the average retail price the average wholesale termination charge applicable at that price.[135] We consider that average retention should be based on a retail price that excludes VAT, since VAT is not retained by the originating operator (as noted above EE included VAT in its calculation of the average margin for reasons of simplicity).

4.23 Table 4.2 presents the retentions earned by EE at each T-Mobile and Orange pricing point under the wholesale termination charges that would apply under NCCN 1101 if EE left prices unchanged.

Table 4.2: Retention earned by EE under NCCN 1101 if prices left unchanged, ppm

Price point	Existing average retail price (incl. VAT)	Average WTC under NCCN 1101	Average retention
All 0843/4 charge bands - T-Mobile	[✂]	[✂]	[✂]
All 0843/4 charge bands - Orange	[✂]	[✂]	[✂]
All 0871/2/3 charge bands - T-Mobile	[✂]	[✂]	[✂]
All 0871/2/3 charge bands - Orange	[✂]	[✂]	[✂]
Weighted average	[✂]	[✂]	[✂]

Source: Ofcom.

[134] Professor Dobbs' comments cover EE's analysis relating to Principles 1 and 2.
[135] We explain how we calculate the average wholesale termination charge in Annex 3.

4.24 Table 4.2 shows that under the new WTCs introduced in NCCN 1101, EE's retention at each price point is between [✂]ppm and [✂]ppm. In addition, the weighted average retention earned by EE across all four price points is [✂]ppm.

4.25 These levels of retention, both for each price point and on average, are above our upper estimate of the pure long run incremental costs of providing mobile call origination (0.8 ppm – see Table 3.1). In addition, the retention earned by EE at prevailing retail prices also permits a contribution to common costs, of between [✂]ppm and [✂]ppm based on our estimate of pure LRIC. Across all four price points, the weighted average retention earned by EE permits a contribution to common costs of around [✂]ppm. This is sufficient to cover our upper estimate of LRIC+, with a contribution to 100% of A&R costs (see Table 3.1). To the extent that MNOs need to be able to recover their common costs of mobile origination from calls to 0843/4 and 0871/2/3 numbers, we consider that NCCN 1101 permits a material contribution to these costs, even if EE does not change its retail prices.

4.26 In conclusion, we consider that NCCN 1101 permits EE to recover its LRICs of providing call origination, and make a material contribution to common cost recovery. Given the scope for recovery of common costs, we do not consider that it is necessary to reach a view on the appropriate value for the efficient costs of originating a mobile call to the number ranges covered by NCCN 1101.

4.27 We note that to the extent that the contribution to common costs made by the affected number ranges is smaller under NCCN 1101, we consider it likely that EE can recover a proportion of these common costs elsewhere in the retail offering. We capture the effect of this on consumers through our assessment of the MTPE, under Principle 2.

4.28 Therefore, we provisionally conclude that NCCN 1101 satisfies Principle 1.

Principle 2: Effects on consumers

4.29 In this section we consider the four elements which relate to this principle (see Section 3), before setting out our overall assessment of whether the charges in NCCN 1101 are beneficial to consumers.

Direct effect

Views of the parties

EE's views

EE's analysis of the Direct effect

4.30 In EE's NCCN 1101 and 1107 dispute submission, it considered the likely impact of NCCNs 1101 and 1107 on its retail pricing using two methodologies. The first considers the effect of the NCCNs on pricing incentives assuming a change in the retail price of calls has no impact on the volume of calls to the affected number (we refer to this below as EE's 'no demand effect' analysis). The second approach considers the likely impact of the NCCNs on retail pricing including likely demand effects, which we refer to as its 'demand effect' analysis.

No demand effect analysis

4.31 EE's 'no demand effect' analysis assumes that EE will adjust its retail call prices in order to restore, or come as close as possible to restoring ppm margins earned on calls to the affected number ranges to their previous levels following the introduction of the NCCNs.

4.32 EE calculates the ppm margin at the minimum and maximum retail price for each 'step' of the termination rate schedule. As with its analysis under Principle 1, EE calculates the ppm margin using a marginal cost of origination of 5ppm, which is based on a LRIC+ cost standard.

4.33 EE identifies the incentive to alter retail prices by comparing the initial retail price with the retail price that comes closest to restoring the ppm margin to the level prior to the introduction of the NCCN. EE conducts this analysis for a representative ([✂]) charge band within each of the affected number ranges.

4.34 In relation to NCCN 1101, EE analyses the effect on prices for two charge bands: g6 (0844) and g7 (0871) and finds incentives for both T-Mobile and Orange to increase retail prices for calls to 0843/4 and 0871/2/3 numbers under NCCN 1101.

Demand effect analysis

4.35 EE's 'demand effect' analysis extends the 'no demand effect' analysis to take into account the likely impact of any change in retail price on the volume of calls to the affected number ranges. The analysis assumes that the NCCNs create incentives for EE to adjust its retail prices in order to restore overall profits (rather than just ppm margins) as far as possible to their previous levels.

4.36 For both T-Mobile and Orange, EE calculates overall profits for each number range prior to the introduction of the relevant NCCN by multiplying total call minutes in 2010 by the ppm margin for the representative charge band within that number range.

4.37 EE then calculates overall profits after the introduction of the relevant NCCN at the retail price at the top of each step on the ladder. Call volumes at the top of each step are estimated by applying a price elasticity of demand of -0.4 to the implied change in retail price. EE bases this assumption about elasticity on empirical estimates[136] and notes that Ofcom used a range of -0.2 to -0.4 in its assessment of the welfare impacts of policy changes proposed in its NGCS review December 2010 consultation.[137] The estimated call volumes are then applied to the ppm margin associated with the retail price at the top of each step to estimate the overall profits.

4.38 EE identifies the incentive to alter retail prices by comparing the initial retail price with the retail price that comes closest to restoring overall profits to the level prior to the introduction of the NCCN.

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[136] "The Effects of Lower Mobile Termination Rates (MTRs) on Retail Price and Demand", C. Gorwitsch, J.S. Marcus and C. Wernick: http://www.wik.org/fileadmin/Aufsaetze/MARCUS_et_al_Growitsch_MTR.pdf
"Optimal Fixed-to-Mobile Interconnection Charges", C. Koboldt and D. Maldoom: http://www.dotecon.com/assets/images/rmsyits.pdf

[137] Footnote 305, NGCS review December 2010 consultation, see http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-numbers/summary/non-geo.pdf

4.39 In relation to NCCN 1101, EE finds incentives for both T-Mobile and Orange to increase their retail prices for calls to 0843/4 and 0871/2/3 numbers under the NCCN. In all cases considered except Orange calls to 0843/4 numbers, EE finds that it is not possible for EE to adjust retail call prices to restore overall profits to its pre-NCCN levels.

EE's justification for inelastic demand

4.40 Following EE's NCCN 1101 and 1107 dispute submission, we asked EE to provide us with empirical evidence on the elasticity of demand for calls to 0843/4, 0871/2/3 and 09 number ranges and an explanation of how these estimates were consistent with profit maximisation if they implied that demand was inelastic. We also asked EE to comment on the degree of any spillover effects from the price of calls to these number ranges to demand for other mobile services, and provide supporting evidence where available.[138] EE's response to this request is summarised below.

EE's evidence to support inelastic demand

4.41 EE cites an empirical study by NERA, which found demand elasticities in the mobile sector of approximately -0.3 for all outgoing call services in the short term, increasing to -0.6 in the medium term. NERA found that for nearly all mobile markets, the time taken to transition from short to medium term demand responses was around six months.

4.42 In addition to this study, EE submitted the following analysis:

- a graphical analysis of call volumes to the 0845, 0870 and 080 number ranges (along with the underlying volume data), which all experienced significant retail price reductions following the CAT Judgment (approximately [✂]% for 0845/0870 and [✂]% for 080). EE concludes this analysis showed very limited volume responses to significant price reductions, supporting its view that demand is inelastic;

- an analysis of the percentage change in volumes for three months and six months before and after the price changes for 080 (PAYM and PAYG), 0845 (PAYM) and 0845/0870 (PAYG). These implied volume responses range from -5% (which EE recognises is a counter-intuitive result) to +8%, which EE says gives an indication of inelastic demand as the implied volume change is far less than the change in price; and

- a similar analysis in relation to an effective price increase by Orange for calls to 09 numbers of between [✂]-[✂]% in March 2011. EE finds that volumes were [✂]% lower in the three months after the price change compared with volumes in the three months before, which it notes also suggests an elasticity of substantially less than one.

4.43 EE recognises there are limitations to its analysis, including the fact that EE was unable to split out volumes for those users experiencing price increases from those who did not and was unable to control for other factors potentially affecting demand

[138] Question 5 of the first s191 Notice NCCNs 1101 and 1107 Dispute.

for NTS calls. Nonetheless, it considers the analysis supportive of its view that demand for calls to 0843/4, 0871/2/3 and 09 numbers is relatively inelastic.

EE's reconciliation of inelastic demand with profit maximising behaviour

4.44 EE recognises that profit maximising behaviour typically requires pricing on the elastic part of the demand curve.[139] EE reconciles its view that the demand for calls to the affected number ranges is inelastic with profit maximising behaviour by the negative reputational effects it claims any price increase above current levels would have on its ability to build its brand and customer base. It follows that EE considers there to be spillover effects from the price of calls to 0843/4, 0871/2/3 and 09 numbers to other mobile services, and in particular to subscriptions.

4.45 EE argues on a related note that there are well-established price points in the affected markets, above which further price increases would lead to significant negative publicity and would have an adverse effect on its brand. EE says this implies that demand for calls to the affected number ranges is kinked.

4.46 EE notes it is hard to find evidence in support of these effects, but cites the negative publicity surrounding Orange's decision to increase pay monthly tariffs in line with inflation in December 2011 as one recent example.

BT's views

BT's comments on EE's analysis

4.47 BT submitted some comments by Professor Dobbs on EE's analysis of the Direct effect of NCCNs 1101 and 1107. Professor Dobbs considers that EE's analysis of pricing incentives excluding the likely impact on demand is not a sensible way of modelling the Direct effect. Professor Dobbs notes that if quantity did not change in response to price then a firm could increase profits without bound by continually raising price. He notes that as no one is arguing this is the case, it is misleading to analyse pricing incentives in this way.

4.48 Professor Dobbs also disagrees with the approach taken by EE to analyse pricing incentives taking into account the likely impact on demand. This is because EE assumes demand is inelastic but models pricing incentives in a way that assumes there are no spillovers from the price of calls to these numbers to demand for other mobile services. Professor Dobbs argues that these positions are inconsistent. He notes that if there are no spillovers, then demand must be elastic or else EE would not be maximising profits. If there are spillovers on the other hand, inelastic demand could be consistent with profit maximisation but Dobbs argues that these spillover effects would then need to be incorporated into the model of pricing incentives.

4.49 Professor Dobbs also considers that the estimated marginal cost of origination used by EE in its analysis is too high. Professor Dobbs notes that his use of the 5ppm figure in the context of his first report on the effect of the NCCNs in the 08x cases was to explore the consequences of using a very conservative upper bound for the marginal cost of origination. Professor Dobbs also notes that he subsequently

[139] In this context, the reference to the elasticity of demand refers to the point elasticity of demand at the relevant price.

considered 2ppm as the upper bound on the marginal cost of origination after he became aware of Ofcom estimates of this cost. Furthermore, Professor Dobbs argues that marginal cost should be defined to give an indication of how much a particular line of business contributes to overall costs, and hence should not include an allocation of fixed and common network costs (as is the case in a LRIC+ cost standard).

BT's analysis of the Direct effect

4.50 BT did not submit any new analysis of the Direct effect of NCCNs 1101 and 1107. However, Professor Dobbs argued that there was an unambiguous incentive to reduce retail prices under NCCN 1046 resulting from the fact that there was a continually increasing ladder of termination charges. He then drew a parallel between NCCN 1046 and NCCNs 1101 and 1107, which also feature a continually increasing ladder of charges, which we understand to suggest that he considers it likely the NCCNs 1101 and 1107 will also lead to an unambiguous incentive to reduce retail prices as a result.

Views of interested parties

4.51 Vodafone submits that it believes ladder pricing has the effect of incentivising OCPs to increase prices either on the number ranges in question or on other services. It states that the ladder charging system creates a strong incentive for OCPs to increase prices both within each "rung" of the ladder and overall.[140]

Our views

Ofcom comments on EE's analysis

4.52 We agree with BT that a sensible consideration of pricing incentives needs to account for the likely impact on demand of changes in retail price (see Section 3), and so do not place any weight on EE's 'no demand effects' analysis.

4.53 We have considered the evidence and analysis put forward by EE to support its view that demand is inelastic:

- The empirical evidence referred to by EE (set out at paragraphs 4.41) appears to relate to an industry elasticity of demand for all outgoing call services, whereas the relevant elasticity for the purposes of estimating the Direct effect is the elasticity faced by EE for calls to the affected number ranges. On the other hand, we recognise that the elasticity used by EE (-0.4) is consistent with the range of -0.2 to -0.4 used by Ofcom in its impact assessment for NGCS review April 2012 consultation. We note, however, that in the NGCS review April 2012 consultation the elasticity range used by Ofcom represented the 'threshold elasticity' required for the estimated benefits from the proposed interventions to exceed the costs, and was not an empirical estimate of the actual elasticity. In addition, we note that the elasticity range related to an industry-level elasticity, rather than firm-level elasticity; and

[140] Vodafone letter to Ofcom 1st May 2012, paragraphs 9 and 10.

- We consider EE's analysis of volume responses to price decreases in 080/0845/0870 number ranges provides only limited support for inelastic demand in the number ranges relevant to this dispute, given the significant limitations to this analysis recognised by EE itself. These limitations include the fact that EE was unable to split out volumes for those users experiencing price increases from those who did not and, more significantly, that it was unable to control for other factors potentially affecting demand for NTS calls. In our impact analysis for the NGCS review April 2012 consultation, we assumed a rate of decline in NTS call volumes of 10% p.a. occurring for exogenous reasons. EE itself recognises that other factors must be driving demand for NTS calls as its own analysis suggested that in some cases demand fell rather than increased in response to price reductions. Similar points apply to EE's analysis of volume responses to Orange's price increase for calls to 09 numbers.

4.54 We do not believe the evidence submitted by EE provides a basis for concluding that the demand for calls to the affected number ranges is inelastic. However, we recognise that there are some characteristics of the NTS market (notably low price transparency and consumers' resulting lack of price awareness) which may limit the strength of the demand response to a reduction in price.

4.55 We agree with Professor Dobbs that simple economic models of profit-maximising behaviour imply that demand will be elastic at the profit maximising price, absent other factors that affect pricing decisions (such as cross-price effects). Given this, the claim that prices are set on an inelastic part of the demand curve cannot be reconciled with profit maximising behaviour unless there is some explanation for why EE (and MNOs more generally) have not responded to inelastic demand by increasing prices.

4.56 One possible explanation put forward by EE (and referred to in the 08x cases) is spillover effects. We consider that EE's evidence on reputation effects (summarised in paragraphs 4.42-4.46 above) offers only limited insight to the possible impact of increasing the price of calls to 0843/4, 0871/2/3 or 09 numbers on its reputation and net additions. This is because the evidence relates to the impact on reputation from an increase in the monthly charges for the overall bundle on Orange's pay monthly tariffs, which are very visible to subscribers. Consumer awareness of prices in the number ranges affected by the NCCNs in dispute is far lower than headline tariffs, as demonstrated by our consumer research in our NGCS review April 2012 consultation.[141]

4.57 We also note that the fact that EE's recent price increases for calls to 080 and 0845/0870 numbers apply to new subscribers only appears inconsistent with EE's suggestion that the price of NTS calls may result in reputational harm. In particular, it is unclear why EE would increase prices of calls to these numbers if this undermined its ability to acquire new customers.

4.58 Moreover, we explain in paragraph 3.39 why we think it unlikely that there would be spillover effects from increasing prices of non-geographic calls.

[141] We note that our consumer survey found that consumers tended to have better awareness of prices for calls to 09 numbers than they did to other non-geographic number ranges, such as 0843/4 and 0871/2/3, see NGCS review April 2012 consultation, paragraph 4.51. As a result, we expect it would be more feasible still for EE to manage the reputation effect of price increases in 0843/4 and 0871/2/3 number ranges than it would in 09 number ranges.

4.59 EE also refers to the possibility of demand being kinked. However, EE appears to suggest this as an implication of there being spillover effects, rather than an alternative explanation for reconciling inelastic demand with profit-maximising behaviour. For the reasons explained above, we have not seen evidence which is in our view sufficient to show the existence of spillover effects and we believe that the characteristics of the NGC market make it unlikely that such effects exist. At the same time, we note that the possibility of demand being kinked for other reasons is a plausible theory for reconciling inelastic demand with profit maximising behaviour, although we have not seen any evidence to support such a theory.[142]

4.60 Overall, we have not seen empirical evidence which is sufficient to persuade us on either the responsiveness of demand to a change in price, or a mechanism that reconciles the possibility of demand being inelastic with profit-maximising behaviour.

4.61 As noted in Section 3, the Direct effect will depend on the responsiveness of call volumes to changes in retail price. It is unclear to us how demand will respond to a reduction in retail price, we think some increase in call volumes is likely. At the same time, we explain in paragraph 3.29 that we consider there are some features of the NTS market which may limit the extent to which a reduction in retail prices for NTS calls is likely to result in an increase in call volumes (notably low price transparency and consumers' resulting lack of price awareness). Therefore, it may be the case that the demand response to a price reduction is limited.

Ofcom's comments on BT's analysis

4.62 We disagree with BT's assertion that a continually increasing ladder of WTCs will always create incentives to reduce retail prices. For example, if the steps of the ladder were very long and call demand was not particularly responsive to price, there may be incentives to increase price without incurring any increase in WTCs. We note that the results of our analysis below, which is based on the model of the Direct effect developed by Professor Dobbs himself, do not support BT's claim that the NCCNs will always create incentives to reduce retail prices.

4.63 We also note that BT's submission is inconsistent with the revenue analysis contained in its own Internal Governance paper used to support NCCNs 1101 and 1107, which assumed MNOs would leave retail prices unchanged (see paragraph 4.96 below).

Ofcom's view on the Direct effect of NCCN 1101

4.64 We explain in paragraphs 3.28 and 3.29 that there is a clear incentive for MNOs to reduce retail price down to the bottom step if the wholesale tariff schedule lies above the straight line that starts at the end of the bottom step and along which retention is constant. For all of the schedules specified in NCCN 1101 (described in paragraphs 4.4-4.8 above), it is not the case that the entire schedule beyond the bottom step of the ladder lies above this line.

[142] For the avoidance of doubt, we do not rule out the possibility of other explanations.

Figure 4.1: Weighted average wholesale tariff schedule for 0843/44 calls under NCCN 1101 (T-Mobile)

[✂]

Source: Ofcom analysis of NCCN 1101.

Figure 4.2: Weighted average wholesale tariff schedule for 0871/2/3 calls under NCCN 1101 (T-Mobile)

[✂]

Source: Ofcom analysis of NCCN 1101.

4.65 Figures 4.1 and 4.2 above show how the weighted average termination charge schedules corresponding to each of EE's price points for T-Mobile calls compare to the line along which retention is constant beyond the bottom step. (The corresponding figures for EE's price points for Orange calls are very similar.) Because the length of the initial steps is greater than their height, the schedules sit below the line along which retention is constant (even though the schedules are steeper than the line once a certain price is reached).

4.66 In view of this, we consider that there is not an unambiguous incentive to reduce price, either at all, or to the bottom step on the charging ladder, irrespective of the responsiveness of call demand to price. As a result, the direction and magnitude of the Direct effect is an empirical question and will in general depend on the structure of the wholesale tariff schedules, the nature of demand for calls to the affected number ranges, and the way in which MNOs respond to the incentives created by tiered termination charges (see Section 3).

4.67 As explained in paragraphs 3.33-3.40, we have used a modified version of the Dobbs 3 model to inform our assessment of the potential impact of the proposed termination charge schedules in NCCN 1101 on EE's retail prices for calls to 0843/4 and 0871/2/3 numbers. We have considered the Direct effect for each of EE's price points covered by NCCN 1101. We explain our approach, and note some important caveats to this analysis in Section 3 and Annex 3.

4.68 As noted in paragraph 3.41, we recognise that this model is a stylised representation of reality which may not accurately reflect the actual response of the MNOs to BT's NCCNs in practice. In addition, as explained in Annex 3, we consider that there is considerable uncertainty about the nature of demand for calls to the affected number ranges, and in particular how a change in the applicable retail price might affect the volume of calls originated by an MNO to these numbers. For the purpose of our analysis we have considered two hypothetical demand scenarios (i.e. both linear and constant elasticity demand for calls to the affected number ranges) to illustrate the potential Direct effect of BT's NCCN. We note, however, that we have not seen empirical evidence that would allow us to conclude that either of these assumed demand curves is a good approximation to the actual demand for calls over the relevant price range, or to prefer one form of demand over another.

4.69 For these reasons, we do not consider that reliance can be placed on the precise predictions generated by this model (particularly in relation to the magnitude of the Direct effect). However, we consider this analysis can be used to inform our

assessment of the direction of the Direct effect (i.e. whether retail prices for calls to the affected number ranges increase, decrease, or stay the same).

Direction of the Direct effect

4.70 Our analysis indicates that the wholesale termination schedule in NCCN 1101 may create an incentive for EE to reduce its retail prices for some calls, but also that there may be an incentive to increase some prices (see Annex 4 for detailed results), depending on the nature of the demand for calls to the affected numbers. In particular our analysis suggests that:

- EE has an incentive to increase prices at the T-Mobile price points for 0844 calls in the linear demand scenario, but to decrease these prices in the constant elasticity scenario;
- EE has an incentive to reduce prices at the T-Mobile price points for 0871 calls in the linear demand scenario, but to increase these prices in the constant elasticity scenario;
- EE has an incentive to reduce prices at the Orange price point for 0844 calls in both the linear and constant elasticity demand scenarios; and
- EE has an incentive to increase prices at the Orange price point for 0871 calls in all the scenarios we have considered.[143]

4.71 As noted at paragraph 3.40, we have not seen empirical evidence that we consider would allow us to conclude that either the linear or constant elasticity demand curves is a good approximation to the actual demand for calls over the relevant price range, or to prefer one form of demand over another. Moreover, as noted at paragraph 3.29, we consider that there are some features of the NTS market (notably low price transparency and consumers' resulting lack of price awareness) which may limit the extent to which a reduction in the retail prices for NTS calls is likely to result in an increase in call volumes. If the demand response to a reduction in retail prices is smaller than in the linear and constant elasticity demand scenarios we have considered, this would result in a weaker incentive for EE to reduce its retail prices.

4.72 In view of the results of our analysis, and in light of the uncertainty about the nature of the demand for calls to the affected number ranges, we consider that the direction of the Direct effect in relation to NCCN 1101 is uncertain.

Magnitude of the Direct effect

4.73 As noted above, we do not consider that reliance can be placed on the precise predictions of the Dobbs 3 model, particularly in relation to the magnitude of the Direct effect. We note, however, that in the two demand scenarios we have considered, even if EE has an incentive to reduce prices under NCCN 1101, this may only be a partial price reduction to a step on the WTC ladder above the bottom step.

[143] The results summarised in this Section are based on the assumption that the marginal cost of mobile origination is 0.8 ppm. The results based on a higher marginal cost of mobile origination (i.e. 2 ppm) are set out in Annex 4.

As a result, EE would face higher WTCs than it would prior to the introduction of the NCCN.

Mobile Tariff Package Effect

Views of the parties

EE's views

4.74 As noted in paragraph 4.39 above, EE finds that it is not possible to adjust its retail prices to restore total margins fully in any case considered except calls by Orange customers to 0843/4 numbers. EE argues that this reduction in margins from calls to 0843/4 and 0871/2/3 numbers will mean it has to take a correspondingly higher contribution to its shared costs from other mobile services in order to maintain its overall profitability. Through this channel, EE argues that NCCNs 1101 (and 1107) will lead to a significant MTPE.

4.75 EE notes that whether the increase in termination rates contained in NCCNs 1101 and 1107 is recovered directly through increased prices for calls to the affected number ranges or indirectly through the MTPE there will be a reduction in consumer welfare. This reduction in welfare will be composed of the higher prices paid by those consumers who continue to purchase the service and the deadweight loss experienced by those consumers who no longer purchase the service as a result of the price increase.

4.76 EE argues that the reduction in consumer welfare will be greater if it is forced to recover margins through price increases on other mobile services rather than directly on 0843/4, 0871/2/3 (and 09) calls. It explains that this is because demand for other mobile services (such as calls to geographic numbers and texts) is more elastic than calls to non-geographic numbers, as consumers use these other mobile services far more frequently and so can be expected to be far more sensitive to price. The fact that consumers use these other mobile services more also means that the number of consumers affected by any price increase is likely to be far higher.

4.77 EE also provided us with its view on the size of the MTPE.[144] EE states there is good evidence to suggest that the MTPE is significant and that any factor reducing non-geographic calls revenues is therefore likely to push up the price of other mobile services. EE believes the waterbed effect is likely to be greater than 50%, noting that even if the downstream market were a perfect monopoly it would be profit maximising to pass through 50% of the revenue impact.

4.78 EE considers evidence of the waterbed effect in relation to calls to NTS numbers is limited by a number of factors including the 08x cases (at the time EE submitted its response the case was before the CoA), the fact EE was withholding payment for the affected number ranges and the fact that recent reductions in call termination revenues have led to changes in retail prices which are difficult to distinguish from the need to recover any lost NTS call revenue. However, it considers evidence of the waterbed effect in relation to mobile termination revenues is relevant to the extent of the waterbed effect in the context of the Disputes.

[144] EE's response to Questions 5-8 of the first s191 Notice NCCN 1101 and 1107 Disputes.

4.79 EE notes that a considerable body of evidence on the waterbed effect was considered by the CC in the course of the MCT appeal, in which the MNOs argued that the move from a LRIC+ to pure LRIC cost standard for mobile termination would lead to an increase in the price of other mobile services through the waterbed effect. The CC concluded the pure LRIC standard for mobile call termination would require that shared fixed and common network costs which were previously recovered from MTRs would need to be recovered via higher retail prices, especially for PAYG customers. Its view was that a waterbed effect of 80% was likely to be appropriate for considering the scale of these price increases.145 EE summarises the evidence it presented to the CC during the MTR appeal on the existence of the waterbed effect. [✂]

BT's views on EE's analysis

4.80 BT did not submit any analysis of the MTPE of NCCN 1101 (or NCCN 1107).

4.81 Professor Dobbs accepts that following imposition of the disputed NCCNs, waterbed effects may indeed give rise to increases in prices for other services (and/or reduced subsidies for handsets for example) within the tariff packages. He acknowledges that this is true whether or not the NCCNs induce reductions in the retail prices for 0843/4 and 0871/2/3 calls. However, he argues that it is not possible to assess what the precise quantitative welfare effects associated with waterbed effects might be. As a result, Professor Dobbs states that he is unconvinced by aspects of EE's analysis, and considers that it may be seriously misleading.

4.82 In relation to EE's argument that demand for other services is elastic, Professor Dobbs notes that waterbed effects arise from competition in the market as a whole and so occur simultaneously for all firms. As a result, it is the market elasticity that is relevant, which, in an oligopolistically competitive market is lower than the firm elasticity (in absolute terms).

Views of interested parties

4.83 H3G states that they agree with EE that NCCNs 1101 and 1107 may well have a substantial effect on the prices for other mobile services.[146]

4.84 As noted in paragraph 4.51 above, Vodafone submits that it believes ladder pricing has the effect of incentivising OCPs to increase prices either on the number ranges in question or on other services.

Our views

4.85 Our views on the likelihood of the MTPE, and the mechanism through which it might operate are set out in Section 3.

4.86 We do not agree with EE's statement that 50% should provide an absolute lower bound for the waterbed effect. The reasoning behind EE's argument is not entirely

[145] EE's response to first s191 notice NCCN 1101 and 1107 Disputes.
[146] Letter from H3G to Ofcom dated 27 April 2012, page 4.

clear, but we presume the 50% figure refers to pass-through of a wholesale cost increase by a single product monopolist operating in a downstream market characterised by linear demand. We are not aware of any model that has been developed to predict the extent of a waterbed effect, which we note operates through a different channel than the pass-through of a wholesale cost increase.

4.87 In relation to EE's assertion that price increases on other mobile services will have a greater impact on consumer welfare than price increases on 0843/4, 0871/2/3 (and 09) calls, we consider that the relative welfare impact will depend on the extent of the increase in the prices of other services, and the elasticity of demand for each service concerned. There is uncertainty around which services, or how many, EE would choose to increase the prices of, and therefore whether and to what extent there will be an impact on the level of demand for other services in response to the MTPE. For example, if price increases are concentrated on just a small number of services, the percentage price increase would be considerably larger, making a demand response more likely.

4.88 Given the uncertainty around the strength of the MTPE and the speed with which it operates, we agree with Professor Dobbs that it is not possible to precisely quantify the MTPE.

Assessment of the MTPE resulting from NCCN 1101

4.89 The wholesale tariff schedules specified in NCCN 1101 will in our view reduce the profit earned by EE on calls to 0843/4 and 0871/2/3 numbers. Additional variable termination charges applicable to these calls will have the effect of reducing EE's profits. Even if EE tries to reduce the termination charges it pays by reducing retail prices, it will still be earning a lower margin per minute due to the lower retail price. The reduction in margin is unlikely to be offset by a sufficiently large increase in call volumes to leave EE's profits from calls to the affected number ranges unchanged.

4.90 As a result, it is in our view likely that the prices for other mobile services would go up through the MTPE. To gauge the potential scale of the MTPE, we have estimated the impact of NCCN 1101 on EE's profits on calls to 0843/4 and 0871/2/3 numbers under each of the scenarios considered in our assessment of the Direct effect. Our approach to this calculation is set out in more detail in Annex 3.

4.91 Our stylised analysis suggests that the impact of NCCN 1101 on EE's profits on calls to 0843/4 and 0871/2/3 could be around £[✂] per annum. In general, this profit impact is largely a result of increases in termination charges, rather than reductions in retail prices. This is because we find that EE has incentives to only partially reduce, or increase prices. In addition, we find that the majority of the profit impact is on 0844 calls and T-Mobile 0844 calls in particular.

4.92 We note that these figures do not represent our estimates of the MTPE, as this will depend on the strength of the MTPE and the speed with which it operates. In addition, the impact of the MTPE on consumer welfare can be expected to depend on the particular prices for other services that EE chooses to increase.

4.93 Because of these sources of uncertainty, we have not attempted to estimate the MTPE, or its impact on consumer welfare. However, given our view that the waterbed effect is in our view likely to be significant, the indicative figures above suggest that NCCN 1101 is likely to result in a material negative MTPE on mobile customers.

Indirect effect

Views of the parties

4.94 Neither BT nor EE comment explicitly on the Indirect effect in their dispute submissions relating to NCCNs 1101 and 1107.

4.95 However, BT's submission contains some relevant material for our assessment of the Indirect effect, namely its internal estimates of the potential revenue and margin gain from introducing the new charges and details of other TCPs who have already introduced tiered termination rates in the 080, 0845 and 0870 number ranges.

4.96 The BT interal governance paper supporting NCCNs 1101 (and 1107) states that it could potentially generate up to £[✂] in revenue and margin in 2011/12, of which approximately £[✂] might come from EE. These estimates are based on the assumption that retail prices remain at current levels, which BT notes in the paper may overstate revenues if the tiered rates cause OCPs to reduce retail prices. BT notes that any additional revenue generated from NCCN 1101 is unlikely to last for more than [✂] due to potential originating operator price changes and the potential outcome of our NGCS review (should Ofcom's proposals be implemented). BT assumes [✂Redaction of BT's assumptions on the pass-through of incremental revenues to SPs.✂]

Our views

4.97 The Indirect effect refers to the impact of an increase in termination charges on both SPs and, through their impact on service quality and availability, mobile users who make calls to the affected number ranges, in this case 0843/4 and 0871/2/3 numbers. As noted in the context of the 0845/0870 Disputes, we consider there to be three main factors affecting the scale of any Indirect effect:

- whether other TCPs can broadly replicate BT's charges;
- whether BT will pass on higher termination revenues to SPs, e.g. because of competition from other TCPs; and
- how SPs would be likely to respond to any such increase in revenues and if consumers would benefit as a result.

4.98 Our views on these three factors in relation to NCCN 1101 are set out below.

Ability of other TCPs to replicate BT's charges

4.99 In the 08x cases, we recognised there may be no incentive on BT to pass on the benefits of higher termination charges if other TCPs could not, or did not, match BT's increase in charges.

4.100 In the context of the NCCN 1101 and 1107 Disputes we understand from EE that other TCPs have already introduced tiered termination rates on the 0843/4 and

0871/2/3 number ranges.[147] We also understand that other TCPs have introduced tiered termination rates on the 080 number range.[148]

4.101 BT makes a similar observation in its internal governance paper supporting NCCNs 1101 (and 1107), stating that other TCPs have followed BT's example and introduced ladder pricing for calls that transit the BT network and terminate on their 080, 0845 and 0870 numbers. BT also notes that two operators, IV Response and Skycom, have already introduced ladder pricing on calls to their 0844 and 0871 numbers.

4.102 As a result, we consider that other TCPs could introduce similar charges to those contained in NCCN 1101 (as well as NCCNs 1107 and 1046). Furthermore, we consider that there are strong incentives for them to do so given the potentially significant revenue gains.

BT's incentive to pass through higher termination revenues to SPs

4.103 In relation to BT's incentive to pass through increases in termination revenue, we note that number ranges covered by NCCN 1101 are different from those considered in the 08x cases because they exist primarily as revenue sharing number ranges, and are selected by SPs on this basis. Table 4.3 below shows the total revenue received by TCPs from all calls originated in 2009 (including calls originated over fixed lines), and the revenues subsequently passed through to the SPs on these number ranges. It shows that TCP revenues in these number ranges are very high, and that a significant proportion of these revenues are passed on to SPs (52% for 0843/4 numbers and 61% for 0871 numbers).

Table 4.3: TCP and SP revenue from calls to 0843/4 and 0871/2/3 numbers in 2009

Number range	TCP revenue (£m)	SP revenue (£m)	Implied pass-through
0843/4	170	88	52%
0871/2/3	158	96	61%
Total	328	184	56%

Source: TCP and SP revenue from Flow of Funds study (Figures 5.24 and 5.27): http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-numbers/annexes/flow-funds.pdf.

4.104 The fact that these number ranges involve significant revenue share suggests that TCPs are likely to compete to attract SPs by offering better revenue sharing deals. We would therefore expect BT (and other TCPs offering similar tiered WTCs) to pass through a proportion of any increase in termination revenue.[149]

[147] EE's NCCN 1101 and 1107 dispute submission, paragraph 5.2.
[148] EE's NCCN 1046 dispute submission, paragraph 2.95.3.
[149] We note that BT's share of all calls to the 0843/4 and 0871/2/3 number ranges originated on EE's network was around [✂]% on average in 2011. This indicates that the market for hosting numbers in these ranges is relatively competitive, and therefore supports the view that TCPs are likely to compete to attract SPs by offering

4.105 However, for the reasons set out in paragraph 3.69, there is considerable uncertainty about the proportion of any increase in termination revenues that TCPs pass through to SPs. We note that BT's internal governance papers supporting NCCNs 1101 (and 1107) appears to support our assessment in Section 3. Specifically, BT's internal governance paper supporting NCCN 1101 [✂Redaction of BT's assumptions on the pass-through of incremental revenues to SPs.✂].

Potential for callers to benefit from additional revenue for SPs

4.106 We recognise the potential for callers to benefit from at least some of any additional revenue passed through to SPs active on the revenue sharing number ranges affected by NCCN 1101. However, for the reasons set out in paragraphs 3.67-3.73, we believe there is considerable uncertainty about the extent to which SPs would invest any additional revenues in improving service quality and availability. Even if they were to do so, there is equal uncertainty about the extent to which callers would value these improvements.

Ofcom's assessment of the Indirect effect

4.107 The charges applicable under NCCN 1101 could potentially have Indirect benefits for SPs. We consider that there may be sufficient competitive pressure on BT (and other TCPs, to the extent that they replicate BT's charges) to ensure that some of the higher termination revenues are passed on over time to SPs. However, the proportion of higher revenues passed on to SPs is uncertain, and there is likely to be a delay before such competitive pressure may be realised.

4.108 As the direction and magnitude of the Direct effect is uncertain, so is the increase in TCP revenues. However, given we consider it unlikely that NCCN 1101 results in incentives to reduce prices fully down to the bottom step, we consider it likely that TCP revenues will increase.[150]

4.109 To give an indication of the possible scale of the benefits to SPs, we have estimated the increase in TCP revenues resulting from NCCN 1101. For the purposes of our analysis, we have assumed that all TCPs will implement a charging structure that is very similar to NCCN 1101 and will therefore all see a very similar increase in revenue as BT. As noted above, we understand from both EE and BT that some operators have already introduced similar charges and would expect others to follow given the significant revenue opportunities involved and the lack of obvious barriers to their introduction. By using our results from the modified Dobbs model to estimate the increase in TCP revenues, our analysis differs from that contained in BT's internal governance papers, because we take into account the potential for EE to adjust retail prices in response to the NCCNs as well as any resulting change in call volumes.

4.110 We estimate that TCP revenue from T-Mobile and Orange calls to 0843/4 and 0871/2/3 numbers would increase by between £[✂]and £[✂]per annum, depending

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better revenue sharing deals. (We calculated BT's share using data provided by EE in response Question 2 of the first s191 notice NCCN 1101 and 1107 Disputes. Specifically, we calculated a weighted average of BT's share at each of EE's price points, weighted using 2011 call volumes.)

[150] It is only if prices fall to the bottom step that EE avoids any increase in termination charges.

on the assumptions made about demand and the marginal cost of origination. We note that the majority of the revenue impact on TCPs comes from 0844 calls.

4.111 Given the uncertainty surrounding the proportion of the increase in termination revenues that BT and other TCPs would pass-through to SP, we have not attempted to estimate the benefits to SPs.

4.112 For consumers of 0843/4 and 0871/2/3 calls to benefit from the Indirect effect, it is also necessary that SPs improve the availability or quality of the services they offer. However, for the reasons set out in paragraphs 3.67-3.73, we consider that it is not clear that callers will necessarily benefit from NCCN 1101.

Competition effect

Views of the parties

4.113 In its NCCN 1101 and 1107 dispute submission, EE notes that in the 0845/0870 Dispute, Ofcom found that the risk of competitive distortion among the TCPs is likely to be relatively low. EE believes that there are no features in NCCNs 1101 and 1107, when compared to those considered in the 0845/0870 Dispute that would lead to a materially different conclusion in this case.[151]

4.114 EE also set out views regarding a potential distortion on OCPs' choice of transit provider which we consider under our analysis of Principle 3.

4.115 EE believes that NCCNs 1101 and 1107 are likely to have a materially distortive effect on the competition of OCPs in retail services.[152]

4.116 In relation to competition between MNOs, EE argues that the 'caps' in the two NCCNs (i.e. the prices beyond which further increments in retail prices incur an equal increment in termination charges) materially restrict the retail price points at which mobile OCPs will be able to recover their margins for 0843/4, 0871/2/3 (and 09) calls. EE argues that this incentivises the MNOs to price at these unique price points (i.e. the threshold price for each ladder) to maximise margins, and therefore restricts their ability to compete in retail prices. EE states that Ofcom found this to be a concern in the 0845/0870 Disputes but considers the problem will be materially worse under NCCNs 1101 and 1107 because this feature was not present in NCCNs 985 and 986.[153]

4.117 In relation to competition between fixed and mobile OCPs, EE observes that NCCNs 1101 and 1107 allow an identical margin to both fixed and mobile OCPs at the same retail price points, despite the fact that mobile OCPs face a higher cost of origination for these calls than fixed OCPs. EE argues that, given the need for both fixed and mobile OCPs to earn a margin which on average covers the cost of origination, NCCNs 1101 and 1107 will put at risk the profitability and extent to which EE can promote packages offering calls to the affected number ranges in bundles. EE believes that this will lead to a distortion of competition between fixed and mobile OCPs, with the result that consumers will increase the volume of calls to the affected

[151] EE's NCCN 1101 and 1107 dispute submission, see paragraph 3.57.
[152] EE's NCCN 1101 and 1107 dispute submission, see paragraph 3.59.
[153] EE's NCCN 1101 and 1107 dispute submission, see paragraph 3.60.

number ranges made via fixed lines compared with mobiles. EE argues that this increase in calls from fixed lines will be inefficient as consumers value making these calls on the move, but do this less by using fixed OCPs instead.[154]

4.118 Finally, in relation to competition between MNOs and MVNOs in retail services, EE submits that in the 0845/70 Disputes Ofcom found that there were possible concerns but that the nature of these effects would depend on the method used to derive the MNOs' average retail prices.[155] EE argues that the methods suggested by the CAT in its consideration of the 08x cases would isolate EE's MNVO customers from the impact of BT's ladder charges. In particular, the termination rate payable by EE under the CAT's judgment for EE's MVNO traffic for the purposes of Period 2 is EE's published retail prices. As a result, the charges payable by the MVNOs to EE are not affected by fluctuations in the MVNOs' own retail rates. Because of this, EE states that these methods would remove any incentive impact of the ladder charging structure on the MNVOs if extended to NCCNs 1101 and 1107. EE therefore believes that there is a strong risk of a material distortion in competition between MNOs and MNVOs in relation to the supply of calls to non-geographic numbers.[156]

4.119 BT has not made any submissions on issues relevant to the competition effect.

Our views

4.120 In paragraphs 3.74-3.90 we set out our views on the elements of the competition effect that are relevant to our analysis, which we consider to apply to all of the disputed NCCNs.

4.121 EE's NCCN 1101 and 1107 dispute submission raises some issues that we considered in the 08x cases. As noted in Section 3, we believe our findings in relation to these issues in the 0845/70 Disputes to be directly applicable to the Disputes.

4.122 In relation to EE's argument that the NCCNs will distort competition between MNOs, we disagree that the NCCNs will restrict the number of retail price points at which mobile OCPs can recover their margins, and in particular that they will result in uniform pricing at the threshold price where margins are maximised. There are two main reasons for this.

4.123 First, as we observed in the 0845/0870 Dispute in relation to a similar point, if there were a move towards more uniform retail prices between operators, we would expect to see this convergence in terms of average prices rather than individual prices. We are therefore of the view, as we were in the 0845/0870 Dispute, that the MNOs would have significant freedom to set different individual prices even if the NCCNs led to a convergence in average retail prices.[157]

4.124 Secondly, we do not agree with EE that the NCCNs will necessarily lead to a material restriction in the number of average retail prices, and in particular that they will result in all MNOs charging the retail price beyond which further increments in retail prices incur an equal increment in termination charges. EE argues all MNOs will be incentivised to price at this point because this is the price which maximises margins.

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[154] EE's NCCN 1101 and 1107 dispute submission, see paragraph 3.61.
[155] EE's NCCN 1101 and 1107 dispute submission, see paragraph 3.61.
[156] EE's NCCN 1101 and 1107 dispute submission, see paragraph 3.68.
[157] See 0845/0870 Draft Determination, paragraph 5.267; also see Supplementary Consultation, paragraph 2.64.

However, as noted in our discussion of EE's submission on the Direct effect, we do not consider it appropriate to identify the optimal retail price on the basis of a consideration of margins alone. The optimal post-NCCN retail price will depend on overall profitability, which in turn depends on both margins and call volumes. As call volumes vary, at least to some extent, with retail price, the retail price points which come closest to restoring pre-NCCN margins need not necessarily be the price points which maximise overall profits.

4.125 We note that the MNOs set very different retail prices for calls to the affected number ranges before NCCNs 1101 and 1107 was introduced, despite facing identical termination charges. In other words, all MNOs would have made very similar margins from setting the same retail price, and yet chose to set different prices in order to maximise their individual overall profitability. This suggests the MNOs may have different considerations when setting prices for calls to these number ranges, which they take into account when making any adjustment to their retail prices. As NCCNs 1101 and 1107 have not led to a material reduction in the number of retail prices at which MNOs can cover their costs of origination, we see no reason to believe MNOs would not continue to respond to these different considerations by selecting different average retail prices under these NCCNs. This is reflected in our theoretical assessment of the Direct effect, which predicts different post-NCCN retail prices for each operator, depending on their initial retail price.

4.126 In relation to the potential distortion between fixed and mobile OCPs, we note that before NCCNs 1101 and 1107 were introduced, a fixed and mobile OCP setting the same retail price would pay the same termination charge. The mobile OCP's margin in this case would be slightly lower to reflect its higher costs of originating NTS calls. In our NGCS review April 2012 consultation, we estimated the difference in the pure LRIC of originating an NTS call to be approximately 0.6ppm-0.7ppm.[158] Mobile OCPs were free to set retail prices above the level charged by fixed OCPs to reflect these higher costs, and could do so without incurring any increase in termination charge. However, the price differences were, in general, far larger than was warranted by the differences in origination costs, and mobile OCPs made significantly larger margins on calls to these numbers than fixed OCPs as a result. The fact that the price differential was significantly greater than was warranted by the cost differential is likely to have distorted consumers' choices, leading to an under-consumption of calls from mobiles.

4.127 It is still the case that under the NCCNs, a fixed and a mobile OCP setting the same retail price would pay the same termination charge. In theory, NCCNs 1101 and 1107 could prevent mobile OCPs from competing with fixed OCPs if they were unable to cover their origination costs at a price level which was competitive with that set by fixed OCPs. However, we note that the bottom rung of all termination ladders contained in NCCNs 1101 and 1107 is set at a price which is higher than the rate charged by BT Retail for a fixed line call to the same number; approximately 2 to 6 ppm/ppc in the case of NCCN 1101 and 8 ppm/ppc higher in the case of NCCN 1107 (figures calculated excluding VAT). This means that mobile OCPs could set prices at the level charged by BT retail plus an additional amount to reflect their higher origination costs of approximately 0.6ppm-0.7ppm without paying a higher termination charge than fixed OCPs, as they were prior to the introduction of the NCCN.

[158] See NGCS review April 2012 consultation, see paragraphs A22.52 and A22.57.

4.128 The introduction of NCCNs 1101 and 1107 would prevent MNOs from earning significantly higher margins on calls to the affected number ranges than fixed OCPs. This is because if MNOs were to increase average retail prices above the level charged by fixed OCPs by an amount significantly higher than the difference in their costs of origination, they would incur an increase in termination charges. However, we do not consider this would distort competition between fixed and mobile OCPs in the supply of non-geographic calls and disagree with EE's conclusion that consumer choices would be distorted as a result. In fact, to the extent that NCCNs 1101 and 1107 encourage a reduction in average retail prices for mobile calls to the affected number ranges, we consider this is likely to improve the efficiency of price signals to consumers by moving relative prices more closely in line with relative costs.

4.129 In relation to competition between MNOs and MVNOs, we do not agree that MVNOs would necessarily be able to avoid the ladder charges under NCCNs 1101 and 1107, as this will depend on the payment mechanisms agreed between BT and the MNOs, and between the MNOs and their MVNO customers. However, we recognise that were EE to adopt the mechanism for payment set out in the CAT Judgement then the MVNOs would not face the same direct incentive properties of NCCNs 1101 and 1107. We have considered the potential impact of this on competition between MVNOs and MNOs in retail services as follows.

4.130 The introduction of NCCNs 1101 and 1107 may lead directly to retail price reductions in the affected number ranges by the MNO host, who would benefit from lower termination charges by reducing retail prices in this way. MVNOs would not have the same direct incentive as the MNOs to reduce their retail prices because doing so would have no influence on the level of termination charge they pay.

4.131 However, this ignores the fact that the MVNOs may still be incentivised to match the MNO price reduction in order to remain competitive with the MNOs. Whether this is the case or not will depend on the strength of demand reaction they expect from callers in response to a change in their prices relative to those of the MNOs. If this response is limited, the MVNOs would face weaker incentives to match the MNOs' price reductions and stronger incentives to pass on the increase in termination charges to their callers.

4.132 Overall, we recognise the potential for some distortion to competition between MVNOs and MNOs in the supply of calls to the number ranges affected by NCCNs 1101 and 1107. However, the materiality of this effect is uncertain since it depends on the Direct effect on the MNOs' retail prices, and on consumer response to any differential in prices set by MVNOs and their MNO hosts for calls to the affected number ranges. More fundamentally, we do not consider the method outlined by the CAT is the only practical method for implementing these NCCNs. We note that to the extent NCCNs 1101 and 1107 would result in a competitive disadvantage for the MNO hosts, they would be incentivised to find a means of billing their MVNO customers a termination charge in line with the retail price they were setting. As a result, whilst we recognise there is a risk of distortion in some circumstances, we do not consider this risk to be unavoidable.

Overall effect on consumers

4.133 Having considered each of the four factors individually, we now set out our assessment of whether NCCN 1101 provides an overall benefit to consumers.

4.134 We consider that the direction and magnitude of the Direct effect resulting from NCCN 1101 is uncertain. As discussed above, our analysis suggests that this NCCN may result in an incentive to reduce some prices and increase others, depending in part on the nature of the demand for calls to the affected numbers. In addition, we consider that the available evidence does not allow us to conclude that EE would be incentivised to reduce retail prices down to the bottom rung of the tiered termination schedules in NCCN 1101, and as a consequence MNOs may face a potentially significant increase in termination charges.

4.135 As discussed in paragraph 3.53, we consider that the MTPE is a foreseeable and predictable consequence of NCCN 1101. Additional termination charges payable under NCCN 1101 would have the effect of reducing EE's profits, and we consider that it is likely that this would result in an increase in the prices of mobile services (other than calls to the affected number ranges) through the MTPE, to the detriment of mobile customers. Whilst the precise speed and scale of the MTPE is uncertain (in part because it depends on the Direct effect), we consider that it may be significant.

4.136 We have considered whether we should place additional weight on the Direct effect to reflect the externalities we have identified in Section 3 (namely, the alleviation of suppressed or distorted demand, and an improvement in SPs' incentives – see paragraph 3.99). However, we consider that any such additional benefits would only materialise if NCCN 1101 results in significant price reductions. Given our finding in relation to the Direct effect, we consider that it is uncertain whether NCCN 1101 would address these externalities to a material extent.

4.137 We recognise that NCCN 1101 may result in benefits to consumers through the Indirect effect. However we consider the size of any such benefits is highly uncertain. First, the increase in termination revenues to BT and other TCPs from tiered termination rates will depend on the Direct effect. Second, whilst we consider that there may be sufficient competitive pressure on BT (and other TCPs, to the extent that they replicate BT's charges) to ensure that some of the higher termination revenues are passed on over time to SPs, the speed and scale of pass-through is uncertain. Third, the extent to which mobile customers benefit through the Indirect effect depends on the extent to which any additional revenue received by SPs will be passed on to callers. As noted in paragraph 3.76, whilst we recognise that SPs may benefit from increased revenues, we do not consider that this should be a decisive factor, in light of our regulatory duties.

4.138 Given the uncertainty which we have identified as to whether NCCN 1101 will result in a net benefit or net detriment to consumers, and in light of our overriding statutory duties to further the interests of consumers under sections 3 and 4 of the Act,[159] we consider that it is appropriate for us to place greater weight on the potential detriments to consumers that might arise from NCCN 1101.

[159] Ofcom's principal duty when carrying out its functions is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by promoting competition (section 3). Section 4 of the Act requires Ofcom to act in accordance with the six Community requirements (which give effect, amongst other things, to the requirements of Article 8 of the Framework Directive). Section 4 refers in particular to Ofcom's dispute resolution functions under section 185 of the Act.

Provisional conclusion on Principle 2

4.139 On the evidence currently before us, we provisionally conclude that Principle 2 is not met in respect of charges under NCCN 1101 for calls to 0843/4 and 0871/2/3 numbers.

Principle 3: Practicality

4.140 In order to find that NCCN 1101 is fair and reasonable we consider that the proposed termination rates must be reasonably practical to implement.

Views of the parties

4.141 In EE's NCCN 1101 and 1107 dispute submission, it submits that Ofcom was correct in its 0845/0870 Determination that ladder charges are not reasonably practical to implement.[160] EE also notes that although it has been able to reach agreement with BT on the application of the CAT's detailed guidance on how to apply the NCCNs in 08x cases it, *"has still not been able to agree with BT on any clear principles for the imposition of BT's new ladder pricing structures going forwards".*[161]

4.142 EE goes on to state that in the 0845/0870 Dispute, Ofcom raised the potential of the tiered rates causing a distortion as to the OCP's choice of transit provider. As discussed in Section 3, this concern arose from the inability of TCPs to identify the OCP in certain situations. EE notes that the CAT, in its judgment, found this to be a potential "practical" problem rather than a serious competitive risk. EE said it was not aware of any distinguishing features of NCCNs 1101 and 1107 to those considered by Ofcom in the 0845/0870 Dispute and the CAT in its Judgment that would lead to a materially different conclusion in this case.[162]

4.143 We also received views on practicality from an interested party in the NCCN 1101 and 1107 Disputes, Vodafone. Vodafone believes the notification of the termination charges lack transparency and that BT was unable to bill correctly for the calls to the number ranges in dispute.[163] Vodafone concludes that *"the ladder pricing structures are not practicable and moreover the inability of BT to properly implement ladder pricing has caused significant detriment to Vodafone and is likely to continue to do so if this pricing structure is allowed*".[164] To support its argument that BT has been unable to implement the charges, Vodafone provides its internal estimates of errors committed by BT in relation to the 09 ladder charges from December 2011 to March 2012.[165]

4.144 BT has not made any submission on practicality in the NCCN 1101 and 1107 Disputes.

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[160] EE's NCCN 1101 and 1107 dispute submission, see paragraph 3.70.
[161] EE's NCCN 1101 and 1107 dispute submission, see paragraph 3.70.
[162] EE's NCCN 1101 and 1107 dispute submission, see paragraph 3.58.
[163] Vodafone's submission, see Paragraphs 11-15.
[164] Vodafone's submission, see Paragraph 15.
[165] Vodafone's submission, see Annex A.

Our views

4.145 We have not been given substantive new evidence from the parties in dispute regarding practicality, including any potential distortions on OCPs' choice of transit providers. EE has not provided us with additional evidence to substantiate its view that the charges are not practical to implement, other than to refer to Ofcom's conclusion in the 0845/70 Determination and note that its experience in implementing that CAT's Orders in the 08x Judgment validates Ofcom's concerns that the charges were not practical to implement.

4.146 We note that EE appears to have misinterpreted our analysis in the 0845/0870 Determination. We found that Principle 3 was not satisfied on the basis that the new arrangements proposed under NCCNs 985 and 986 would have potentially given rise to considerable complications and a number of issues which had not been fully resolved. In addition, we also noted that there was the potential for wider implications, such as the application of a similar approach to other types of fixed or mobile termination. However, we did not do not accept the position of some MNOs that deriving a reasonable estimate of their own average retail rate is not practicable. Rather, we concluded that each MNO should be in a position to estimate its own average retail price for calls to the number ranges in dispute, to an acceptable degree of accuracy (see Section 3).

4.147 EE also notes that it has yet to establish clear principles with BT for the imposition of the charges in the NCCN 1101 and 1107 Disputes going forward. However, we have not seen evidence that EE and BT have had failed attempts at negotiating what these principles might be. We also note that EE was able to agree a settlement with BT following the CAT Order for the payment of sums under the charges in dispute at that time.

4.148 From the evidence provided by Vodafone,[166] it appears that many of the errors identified by Vodafone relate to issues in the notification process of new charges rather than issues associated with the practicality of the imposition of the specific tiered charges themselves. For example, from December 2011 to March 2012, out of a total of 101 errors identified, 50 of these relate to the category of "*charge bands where unclear if ladder rates should apply*". This category is described as "*number of charge bands where it is unclear whether ladder pricing will apply as Vodafone was not notified by NCCN/letter of the introduction of ladder pricing on these bands, but the CPL was updated to include ladder rates".*

Provisional conclusions

4.149 As discussed in Section 3, the CAT was satisfied, having heard the arguments in the 08x appeals, that it was practical to implement the tiered charges for 080, 0845 and 0870 numbers. Moreover, (most of) the MNOs were able to agree with BT the average charges that were to apply for calculating payments following the CAT's Order. Our starting point is therefore that it should be practical to implement other tiered charges.

4.150 Since the 08x cases, Ofcom has put forward proposals in the context of the NGCS review which could have implications for industry arrangements in the longer term. If

[166] Vodafone's submission, see Annex A.

these proposals are implemented, it is likely that any changes to industry arrangements to give effect to tiered charges would only be in place for a limited period of time.

4.151 We note the charges in NCCN 1101 as compared to those in 08x cases contain a number of charge bands (as discussed in paragraph 4.5) which could have some implications for their practicality.

4.152 We have received no evidence from the parties to the Disputes that demonstrates that it is not practical to implement the charges set out in NCCN 1101. We therefore provisionally conclude that Principle 3 is passed in relation to the charges in NCCN 1101.

Summary of provisional conclusions

4.153 Taking into consideration our assessment across the three Principles, our provisional conclusion is that it is not fair and reasonable for BT to apply the termination charges for calls to 0843/4 and 0871/2/3 number ranges as set out in NCCN 1101.

Section 5

Analysis and Provisional Conclusions for NCCN 1107

5.1 Using the analytical framework set out in Section 3, in this Section, we set out our analysis and provisional conclusions as to whether it is fair and reasonable for BT to apply the termination charges set out in NCCN 1107.

5.2 We also set out our provisional conclusions of whether it is fair and reasonable for BT to apply the termination charges set out in NCCN 1102.[167] Although we have not assessed NCCN 1102 to the same level of detail as NCCN 1107, our overall provisional conclusion is the same.

5.3 This Section is structured as follows:

- first, we discuss the key features of NCCN 1107, and EE's pricing policy for calls to the number ranges affected by this NCCN;
- we then set out the parties' views, our analysis, and our provisional conclusions, against each of the three principles that form our analytical framework; and
- finally, we set out our provisional conclusions as to whether it is fair and reasonable for BT to apply the termination charges set out in NCCN 1107.

5.4 Many of the issues we consider in relation to NCCN 1107 also apply in the context of NCCN 1101. The discussion of these issues is set out in Section 4. In this Section we make cross-references to Section 4 as appropriate.

Key features of NCCN 1107

Structure of the wholesale tariff schedules

5.5 NCCN 1107 contains a number of different wholesale tariff schedules that correspond to BT's retail price charge bands for the 09 number ranges covered by this NCCN.[168] The wholesale tariff schedule varies by charge band and also by time of day (i.e. daytime, evening and weekend).

5.6 NCCN 1107 specifies wholesale tariff schedules for 53 charge bands with three time of day variants for each charge band. Hence there are in total 159 different wholesale tariff schedules for NCCN 1107.

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[167] NCCN 1107 supersedes NCCN 1102. NCCN 1102 introduced tiered termination charges to the 09 number range and was effective 1 November 2011 to 30 November 2011. NCCN 1107 was effective from 1 December 2011, and specifies wholesale tariff schedules covering the same charge bands as NCCN 1102. We are not aware of the reason BT introduced the revised charges in NCCN 1107.

[168] Each of these charge bands corresponds to a particular retail price that BT charges its customers for making a call to a number in this range. An SP who purchases a hosting service from BT for one of these number ranges thus indicates its preferred retail call price, and BT issues the SP with a number from the corresponding charge band.

5.7 As with all of the NCCNs in dispute, the bottom rung of each wholesale tariff schedule is set at the WTC that prevailed prior to the introduction of NCCN 1107. The WTC then increases with the OCP's retail price for calls to the affected number range in a series of steps indefinitely.

5.8 For all of the schedules in NCCN 1107 the termination charge increases less rapidly than the retail call price excluding VAT.[169] As a result, the retention per minute (i.e. the retail call price excluding VAT minus the applicable termination charge) available to the MNO increases with each step.

5.9 Once a certain threshold retail price is reached, the steps become shorter so that the length of subsequent steps equals their height. This means that the termination rate increases one-for-one in response to an increase in the retail price. Because the wholesale tariff schedule is specified in terms of retail prices including VAT, which is not retained by the MNOs, the retention per minute available to the MNO declines with each further step. Therefore, the retention per minute is maximised at this threshold retail price. For the wholesale tariff schedules contained in NCCN 1107, the retail price at which retention per minute is maximised varies by charge band.[170]

NCCN 1102

5.10 As explained above, NCCN 1107 supersedes NCCN 1102, which introduced tiered termination charges to the 09 number range and was effective 1 November 2011 to 30 November 2011.

5.11 The wholesale tariff schedules set out in NCCN 1102 are similar to those set out in NCCN 1107. In NCCN 1107, the WTCs that apply at steps above the bottom step are generally slightly higher as compared to those in NCCN 1102. However, the retail prices corresponding to each step are identical (except that for a small number of charge bands, the retail price from which the length of subsequent steps equals their height is now specified in ppm and ppc terms). As a result, the wholesale tariff schedules specified in NCCN 1107 are slightly steeper than those in NCCN 1102.

EE's pricing policy for calls to the affected number ranges

5.12 We understand from EE that it sets separate retail prices for each of its T-Mobile and Orange brands for calls to the number ranges affected by NCCN 1107. However, EE sets a different retail price for each charge band covered by NCCN 1107. These retail prices apply at all times of day. As noted in Section 4, we refer to each of EE's retail prices as 'price points', to distinguish them from BT's charge bands. EE sets the level of each price point on the basis of average termination rates paid for calls to these numbers. We understand that EE sets the level of each price point on the basis of [✂Description of confidential EE retail pricing policy✂].

5.13 Given the large number of charge bands covered by NCCN 1107, and the burden faced by EE in providing us with information covering all of these charge bands, we considered it proportionate to conduct our analysis on only a subset of the charge bands covered by NCCN 1107, that represent the vast majority of EE's call volumes

[169] The wholesale tariff schedule is specified in terms of retail prices including VAT, but this is not retained by the MNOs.
[170] However, the number of steps up to the threshold retail price at which retention per minute is maximised is the same for all charge bands.

to these numbers (see paragraphs A3.5 and A3.6). We therefore asked EE to provide information on average retail prices for charge bands which accounted for [✂]% or more of BT terminated 09 traffic originated by the relevant operator in 2011. On the basis of T-Mobile and Orange's call volumes, we asked EE to provide average retail prices for 13 charge bands for T-Mobile, and 10 charge bands for Orange. The 09 charge bands for which we have information represent approximately [✂]% of total call volumes to 09 numbers.

5.14 EE's price points for T-Mobile and Orange for calls to the charge bands covered by NCCN 1107, which applied immediately before NCCN 1107 came into effect are summarised in Table 5.1 below.

Table 5.1: EE's price points covered by NCCN 1107, ppm/ppc

Price point	T-Mobile average retail price (incl. VAT)	Orange average retail price (incl. VAT)
p10	[✂]	[✂]
p7	[✂]	[✂]
p34	[✂]	[✂]
p16	[✂]	[✂]
p36	[✂]	[✂]
p8	[✂]	[✂]
p0	[✂]	[✂]
ff18	[✂]	[✂]
P7 090682	[✂]	[✂]
p5	[✂]	[✂]
ff13	[✂]	[✂]
ff21	[✂]	[✂]
p3	[✂]	[✂]

Source: EE response to Question 1 of first s191 Notice NCCNs 1101 and 1107 Dispute.
Note: N/A* indicates that this data was not requested, as the charge band accounts for less than [✂]% of BT terminated 09 traffic originated by the operator in 2011 (see paragraph 5.13).

Principle 1: Cost recovery

5.15 To satisfy Principle 1, the WTCs should not deny MNOs the opportunity to recover their efficient costs of originating calls to 09 number ranges hosted on BT's network.

Views of the parties

5.16 As discussed in paragraphs 4.12-4.18, EE's NCCN 1101 and 1107 dispute submission contains an assessment of EE's ability to recover its call origination costs under the new wholesale termination charges introduced in NCCN 1107. BT's comments on EE's analysis were of a general nature and are discussed in Section 4.

5.17 EE's analysis shows that for all of the selected charge bands on the 09 number ranges, the pence per minute margin is positive after the introduction of NCCN 1107. EE does not suggest that NCCN 1107 fails to satisfy Principle 1.

Our views

5.18 As discussed in Section 3, we assess Principle 1 by comparing EE's retention on calls to the affected number ranges under NCCN 1107 at EE's current retail prices.

5.19 As with NCCN 1101, we begin by assessing EE's retention under the new wholesale termination charges that would apply under NCCN 1107 at existing retail prices (i.e. if EE left retail prices unchanged at the level that prevailed prior to the introduction of NCCN 1107).

5.20 We explain above that EE sets retail prices separately for T-Mobile and Orange calls to the 09 numbers affected by NCCN 1107. In addition, it sets a different retail price for each charge band covered by NCCN 1107, which applies at all times of day. Therefore, we assess Principle 1 by calculating the average retention that EE earns at each T-Mobile and Orange price point covered by NCCN 1107 for which we have requested information (see paragraph 5.13).

5.21 Table 5.2 presents the retentions earned by EE at each T-Mobile and Orange pricing point under the wholesale termination charges that would apply under NCCN 1107 if EE left prices unchanged.

Table 5.2: Retention earned by EE under NCCN 1107 if prices left unchanged, ppm/ppc

Price point	Existing average retail price (incl. VAT)	Average WTC under NCCN 1107	Average retention
p10 - T-Mobile	[✂]	[✂]	[✂]
p10 - Orange	[✂]	[✂]	[✂]
p7 - T-Mobile	[✂]	[✂]	[✂]
p7 - Orange	[✂]	[✂]	[✂]
p34 - T-Mobile	[✂]	[✂]	[✂]
p34 - Orange	[✂]	[✂]	[✂]
p16 - T-Mobile	[✂]	[✂]	[✂]
p16 - Orange	[✂]	[✂]	[✂]
p36 - T-Mobile	[✂]	[✂]	[✂]
p36 - Orange	[✂]	[✂]	[✂]
p8 - T-Mobile	[✂]	[✂]	[✂]
p8 - Orange	[✂]	[✂]	[✂]
p0 - T-Mobile	[✂]	[✂]	[✂]
p0 - Orange	[✂]	[✂]	[✂]
ff18 - T-Mobile	[✂]	[✂]	[✂]
ff18 - Orange	[✂]	[✂]	[✂]
P7 090682 - T-Mobile	[✂]	[✂]	[✂]
P7 090682 - Orange	[✂]	[✂]	[✂]
p5 - T-Mobile	[✂]	[✂]	[✂]
p5 - Orange	[✂]	[✂]	[✂]
ff13 - T-Mobile	[✂]	[✂]	[✂]
ff21 - T-Mobile	[✂]	[✂]	[✂]
p3 - T-Mobile	[✂]	[✂]	[✂]
Weighted average	[✂]	[✂]	[✂]

Source: Ofcom.

5.22 We find that under the new WTCs introduced in NCCN 1107, EE's retention at each price point is between [✂]ppm and [✂]ppm. In addition, the weighted average retention earned by EE across all [✂] price points is [✂]ppm.

5.23 For all but two of the price points we have considered, retention at prevailing retail prices is above our upper estimate of the pure long run incremental costs of providing call origination (0.8ppm). However, we find that for two of EE's pricing points – T-Mobile calls to the [✂] charge band and Orange calls to the [✂] charge band – EE's retention at prevailing retail prices is below our LRIC estimate.[171] Moreover, for Orange calls to the [✂]charge band, we find that EE incurs a loss of [✂]ppm on every call under NCCN 1107, if it does not change retail prices.

5.24 As EE is not able to recover its long run incremental costs of providing call origination on calls to these two charge bands at prevailing retail prices, we have looked at

[171] In 2011, these price points accounted for [✂]% and [✂]% of EE's total 09 call volumes respectively.

whether another retail price exists where retention is greater than or equal to LRIC. Figures 5.1 and 5.2 below show how average retention on calls to these two charge bands varies with retail price. It is clear from the Figures that a number of such retail prices exist, including prices on the same step of the wholesale tariff schedule (implying no change in WTC). For example, the retention available to EE at the top of the step which corresponds to EE's current retail price for T-Mobile calls to the [✂] charge band is [✂]ppm (see A in Figure 5.1). The retention available to EE at the top of the step which corresponds to EE's current retail price for Orange calls to the [✂] charge band is [✂]ppm (see A in Figure 5.2). In both cases, the retention earned by EE is above our upper estimate of pure LRIC. EE could also earn retention above our upper estimate of pure LRIC by reducing its retail prices at these two price points to the top of the previous step and face a lower WTC (See B in Figures 5.1 and 5.2).

Figure 5.1: Average retention at different retail prices for the [✂]charge band, under NCCN 1107

[✂]

Source: Ofcom analysis of NCCN 1107.

Figure 5.2: Average retention at different retail prices for the [✂] charge band, under NCCN 1107

[✂]

Source: Ofcom analysis of NCCN 1107.

5.25 The retention earned by EE overall on 09 calls under NCCN 1107 at prevailing retail prices also permits a contribution to common costs. [✂], the weighted average retention earned by EE permits a contribution to common costs of around [✂]ppm on average (based on our LRIC estimate). This is more than sufficient to cover our upper estimate of LRIC+, with a contribution to 100% of A&R costs (see Table 3.1). To the extent that MNOs need to be able to recover their common costs of mobile origination from calls to 09 numbers, we consider that NCCN 1107 permits a material contribution to these costs, even if EE does not change its retail prices.

5.26 In conclusion, we have found that NCCN 1107 permits EE to recover its long run incremental costs of providing call origination, and make a material contribution to common cost recovery.[172] Given the scope for recovery of common costs, we do not consider that it is necessary to reach a view on the appropriate value for the efficient costs of originating a mobile call to the number ranges covered by NCCN 1107.

5.27 We note that to the extent that the contribution to common costs made by the affected number ranges is smaller under NCCN 1107, we consider it likely that EE can recover a significant proportion of these common costs elsewhere in the retail offering. We capture the impact of this on consumers through our assessment of the MTPE, under Principle 2.

5.28 Therefore, we provisionally conclude that NCCN 1107 satisfies Principle 1.

[172] Whilst we have not considered all charge bands covered by NCCN 1107 (see paragraph 5.13), we consider that this result, which is based on charge bands representing [✂], is a reliable indicator for NCCN 1107 as a whole.

NCCN 1102

5.29 The WTCs in NCCN 1107 that apply at steps above the bottom step are generally slightly higher as compared to those in NCCN 1102. Given our finding that NCCN 1107 satisfies Principle 1, it follows that NCCN 1102 will also satisfy Principle 1. This is because the WTC applicable at any given price will be the same or lower under NCCN 1102, as compared to NCCN 1107, and therefore retention will be higher.

Principle 2: Effects on consumers

5.30 In this section we consider the four elements which relate to this principle (see Section 3), before setting out our overall assessment of whether the charges in NCCN 1107 are beneficial to consumers.

Direct effect

Views of the parties

EE's views

5.31 EE's approach to analysing the Direct effect of NCCNs 1101 and 1107 is set out at paragraphs 4.30-4.46.

5.32 Under its 'no demand effect' analysis, EE analyses the effect on prices for one charge band: p10 (09), and finds incentives for Orange to increase its retail prices and for T-Mobile to reduce its retail prices for calls to 09 numbers under NCCN 1107.

5.33 Under its 'demand effect' analysis, EE finds incentives for Orange to reduce its retail prices and for T-Mobile to increase its retail prices for calls to 09 numbers under NCCN 1107. In all cases considered, EE finds that it is not possible for EE to adjust retail prices to restore overall profits to its pre-NCCN levels.

BT's views

5.34 BT's comments on EE's analysis of the Direct effect of NCCN 1107 are set out at paragraph 4.50.

5.35 Although BT did not submit any new analysis of the Direct effect of NCCN 1107, Professor Dobbs implies in his submission that he considers it likely NCCN 1107 will lead to an unambiguous incentive to reduce retail prices.

Our views

5.36 Our views on the parties' submissions on the Direct effect of NCCN 1107 are set out at paragraphs 4.52-4.63.

Ofcom's view on the Direct effect of NCCN 1107

5.37 We explain in paragraphs 3.28 and 3.29 that there is a clear incentive for MNOs to reduce retail price down to the bottom step if the wholesale tariff schedule lies above the straight line that starts at the end of the bottom step and along which retention is constant. For all of the schedules specified in NCCN 1107 (described in paragraphs

5.5-5.9), it is not the case that the entire schedule beyond the bottom step of the ladder lies above this line.

Figure 5.3: Weighted average wholesale tariff schedule for T-Mobile calls to the [✂]charge band under NCCN 1107

[✂]

Source: Ofcom analysis of NCCN 1107.

Figure 5.4: Weighted average wholesale tariff schedule for T-Mobile calls to the [✂] charge band under NCCN 1107

[✂]

Source: Ofcom analysis of NCCN 1107.

5.38 For example, Figures 5.3 and 5.4 above show how the weighted average termination charge schedules for T-Mobile calls to the [✂] and [✂] charge bands compare to the line along which retention is constant beyond the bottom step. We estimate that these two charge bands represent over [✂]% of T-Mobile call volumes in 2011 to the 09 charge bands for which we have requested data (see paragraph 5.12-5.14). Because the length of the initial steps is generally greater than their height, the schedules sit below the line along which retention is constant (even though the schedules are steeper than the line once a certain price is reached). As a result, it is not the case that there will be an unambiguous incentive to reduce price to the bottom step on the charging ladder irrespective of the responsiveness of call demand to price.

5.39 However, a number of EE's price points covered by NCCN 1107 are above the threshold retail price at which the retention per minute is maximised (see Table A4.9 in Annex 4). For these price points, there is a clear incentive on EE to reduce these prices to at least the threshold price at which retention per minute is maximised, irrespective of the demand response. This is because in doing so, EE increases the pence per minute margin and possibly benefits from higher call volumes to the extent that demand for these calls is responsive to a reduction in price. Therefore, the direction of the Direct effect at these price points is unambiguous (i.e. downwards). In relation to the magnitude of the Direct effect at these price points, we consider that there is not an unambiguous incentive to reduce these prices to the bottom step irrespective of the responsiveness of call demand to price. As a result, the magnitude of the Direct effect is an empirical question.

5.40 Similarly, for the remaining price points, we consider that there is not an unambiguous incentive to reduce price, either at all, or to the bottom step on the charging ladder, irrespective of the responsiveness of call demand to price. As a result, both the direction and magnitude of the Direct effect at the remaining price points is an empirical question.

5.41 Where the direction and/or magnitude of the Direct effect is an empirical question, this will in general depend on the structure of the wholesale tariff schedules, the nature of demand for calls to the affected number ranges, and the way in which MNOs respond to the incentives created by tiered termination charges (see Section 3).

5.42 As explained in paragraphs 3.33-3.40, we have used a modified version of the Dobbs 3 model to inform our assessment of the potential impact of the proposed termination charge schedules in NCCN 1107 on EE's retail prices for calls to 09 numbers. We

have considered the Direct effect for each of EE's price points covered by NCCN 1107. We explain our approach, and note some important caveats to this analysis in Section 3 and Annex 3.

5.43 As noted in paragraph 3.41, we recognise that this model is a stylised representation of reality which may not accurately reflect the actual response of the MNOs to BT's NCCNs in practice. In addition, as explained in Annex 3, we consider that there is considerable uncertainty about the nature of demand for calls to the affected number ranges, and in particular how a change in the applicable retail price might affect the volume of calls originated by an MNO to these numbers. For the purpose of our analysis we have considered two hypothetical demand scenarios (i.e. both linear and constant elasticity demand for calls to the affected number ranges) to illustrate the potential Direct effect of BT's NCCN. We note, however, that we have not seen empirical evidence that would allow us to conclude that either of these assumed demand curves is a good approximation to the actual demand for calls over the relevant price range, or to prefer one form of demand over another.

5.44 For these reasons, we do not consider that reliance can be placed on the precise predictions generated by this model (particularly in relation to the magnitude of the Direct effect). However, we consider this analysis can be used to inform our assessment of the direction of the Direct effect (i.e. whether retail prices for calls to the affected number ranges increase, decrease, or stay the same).

Direction of the Direct effect

5.45 Our analysis indicates that the wholesale termination schedules in NCCN 1107 may create an incentive for EE to reduce its retail prices for most calls, depending on the nature of the demand for calls to the affected numbers. In particular our analysis suggests that:

- EE has an incentive to increase prices at the Orange price point for calls to 09 p7 numbers in the linear demand scenario, but to decrease these prices in the constant elasticity demand scenario; and

- EE has an incentive to reduce prices at all but one of the remaining price points for all but one of the remaining price points, in both the linear and constant elasticity demand scenarios.[173]

5.46 As noted at paragraph 3.40, we have not seen empirical evidence that would allow us to conclude that either the linear or constant elasticity demand curves is a good approximation to the actual demand for calls over the relevant price range, or to prefer one form of demand over another. Moreover, as noted at paragraph 3.29, we consider that there are some features of the NTS market (notably low price transparency and consumers' resulting lack of price awareness) which may limit the extent to which a reduction in the retail prices for NTS calls is likely to result in an increase in call volumes. If the demand response to a reduction in retail prices is smaller than in the linear and constant elasticity demand scenarios we have considered, this would result in a weaker incentive for EE to reduce its retail prices.

[173] The results summarised in this Section are based on the assumption that the marginal cost of mobile origination is 0.8ppm. The results based on a higher marginal cost of mobile origination (i.e. 2ppm) are set out in Annex 4.

5.47 In light of the uncertainty about the nature of the demand for calls to the affected number ranges, we cannot exclude the possibility that NCCN 1107 could result in an increase in some 09 call prices. However, we consider that the balance of the available evidence suggests that it is more likely that EE will have an incentive to reduce most of its 09 price points.

Magnitude of the Direct effect

5.48 As noted above, we do not consider that reliance can be placed on the precise predictions of the Dobbs 3 model, particularly in relation to the magnitude of the Direct effect. We note, however, that in the two demand scenarios we have considered, even if EE has an incentive to reduce prices under NCCN 1107, this may only be a partial price reductions to a step on the WTC ladder above the bottom step. As a result, EE would face higher WTCs than it would prior to the introduction of the NCCN.

MTPE

Views of the parties

EE's views

5.49 EE's views on the MTPE are set out at paragraphs 4.74-4.79.

5.50 In relation to NCCN 1107, EE argues that the reduction in margins from calls to 09 numbers that it identifies under its analysis of the Direct effect will mean it has to take a correspondingly higher contribution to its shared costs from other mobile services in order to maintain its overall profitability. Through this channel, EE argues that NCCN 1107 will lead to a significant MTPE.

BT's views on EE's analysis

5.51 Although BT did not submit any analysis of the MTPE of NCCN 1107, some general comments by Professor Dobbs on EE's analysis are set out in Section 4. In summary, Professor Dobbs agrees that there may be a MTPE as a result of NCCN 1107 (and NCCN 1101), but is unconvinced by aspects of EE's analysis.

Our views

5.52 Our views on the parties' submissions are set out in paragraphs 4.85-4.88.

Assessment of the MTPE resulting from NCCN 1107

5.53 The wholesale tariff schedules specified in NCCN 1107 will reduce the profit earned by EE on calls to 09 numbers as a result of the additional variable termination charges applicable. Even if EE tries to reduce the termination charges it pays by reducing retail prices, it will still be earning a lower margin per minute due to the lower retail price. The reduction in margin is unlikely to be offset by a sufficiently large increase in call volumes to leave EE's profits from calls to the affected number ranges unchanged.

5.54 As a result, it is likely that the prices for other mobile services would go up as a result of the MTPE. To gauge the potential scale of the MTPE, we have estimated the impact of NCCN 1107 on EE's profits on calls to 09 numbers under each of the

scenarios considered in our assessment of the Direct effect. Our approach to this calculation is set out in more detail in Annex 3.

5.55 Our stylised analysis suggests that the impact of NCCN 1107 on EE's profits on calls to 09 numbers could be around £[✂] per annum. We find that [✂] of the profit impact is on T-Mobile and Orange calls to the p10 and p7 charge bands in particular (reflecting the fact that these charge bands account for [✂] of total call volumes to 09 numbers).

5.56 We note that these figures do not represent our estimates of the MTPE, as this will depend on the strength of the MTPE and the speed with which it operates. In addition, the impact of the MTPE on consumer welfare will depend on which services, and how many, EE chooses to increase the prices of. This will affect whether there is an impact on the level of demand for other services in response to the MTPE. Because of these sources of uncertainty, we have not attempted to estimate the MTPE, or its impact on consumer welfare. However, given our view that the waterbed effect is significant (see Section 3), the indicative figures above suggest that NCCN 1107 is likely to result in a material negative MTPE on mobile customers.

Indirect effect

Views of the parties

5.57 As noted in Section 4, neither BT nor EE comment explicitly on the Indirect effect in their submissions relating to NCCNs 1101 and 1107. However, we note in Section 4 that BT's submission contains some relevant material for our assessment of the Indirect effect.

5.58 The BT wholesale governance paper supporting NCCN 1107 (and NCCN 1101) estimates an increase in revenue and margin of £[✂] in the second half of 2011/12, and a further £[✂] in revenue and £[✂] in margin on an ongoing basis. The reason given by BT for the reduction in margin on an ongoing basis [✂Redaction of BT's assumptions on the pass through of incremental revenues to SPs✂]. BT also conducts a sensitivity test assuming that 50% of incremental revenues are passed onto SPs. BT recognises that our unbundled tariff proposal (discussed below) would, if implemented, remove the opportunity for ladder charging from its introduction, but assumes that if it is implemented this would not be until at least [✂].

Our views

5.59 In paragraph 3.61, we explain that there are three main factors affecting the scale of any Indirect effect:

- whether other TCPs can broadly replicate BT's charges;
- whether BT will pass on higher termination revenues to SPs, e.g. because of competition from other TCPs; and
- how SPs would be likely to respond to any such increase in revenues and if consumers would benefit as a result.

5.60 Our views on these three factors in relation to NCCN 1107 are set out below.

Ability of other TCPs to replicate BT's charges

5.61 In Section 4, we explain that we consider that other TCPs could introduce similar charges to those contained in NCCN 1107, on the basis of our understanding that other TCPs have already introduced tiered termination charges on the 080, 0843/4 and 0871/2/3 number ranges. Furthermore, we consider that there are strong incentives for them to do so given the potentially significant revenue gains they might achieve.

BT's incentive to pass through higher termination revenues to SPs

5.62 In relation to BT's incentive to pass through increases in termination revenue, we note that the 09 number range covered by NCCN 1107 exists primarily as a revenue sharing number range, and is selected by SPs on this basis. Table 5.3 below shows the total revenue received by TCPs from all calls originated in 2009 (including calls originated over fixed lines), and the revenues subsequently passed through to the SPs on these number ranges. It shows that TCP revenues in these number ranges are very high, and that of these revenues a significant proportion are passed on to SPs (92%).

Table 5.3: TCP and SP revenue from calls to 09 numbers in 2009

Number range	TCP revenue (£m)	SP revenue (£m)	Implied pass-through
09	197	181	92%

Source: TCP and SP revenue from Flow of Funds study (Figure 5.28): http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-numbers/annexes/flow-funds.pdf.

5.63 This suggests that TCPs are likely to compete to attract SPs by offering better revenue sharing deals. We would therefore expect BT (and other TCPs offering similar tiered WTCs) to pass through a proportion of any increase in termination revenue arising from NCCN 1107.

5.64 However, for the reasons set out in paragraphs 3.65 and 3.66, there is considerable uncertainty about the proportion of any increase in termination revenues that TCPs pass through to SPs. We note that BT's internal governance paper proposing the introduction of NCCN 1107 appears to support our assessment in Section 3. [✂Redaction of BT' assumptions on the pass through of incremental revenues to SPs✂].

Potential for callers to benefit from additional revenue for SPs

5.65 We recognise the potential for callers to benefit from at least some of any additional revenue passed through to SPs active on the revenue sharing number ranges, such as those affected by NCCN 1107. However, for the reasons set out in paragraphs 3.67-3.73, we believe there is considerable uncertainty about the extent to which SPs would invest any additional revenues in improving service quality and availability. Even if they were to do so, there is equal uncertainty about the extent to which callers would value these improvements.

Ofcom's assessment of the Indirect effect

5.66 The charges applicable under NCCN 1107 could potentially have indirect benefits for SPs. We consider that there may be sufficient competitive pressure on BT (and other

TCPs, to the extent that they replicate BT's charges) to ensure that some of the higher termination revenues are passed on over time to SPs. However, the proportion of higher revenues passed on to SPs is uncertain, and there is likely to be a delay before such competitive pressure may be realised.

5.67 As the magnitude (and to a lesser extent the direction) of the Direct effect is uncertain, so is the increase in TCP revenues. Although it is uncertain whether NCCN 1107 results in incentives to reduce some prices fully down to the bottom step (where there would be no increase in TCP revenues), we believe that the results of our modelling suggest that it is unlikely that all prices would fall all the way to the bottom step. Therefore, we believe that it is likely that TCP revenues will increase overall.

5.68 To give an indication of the possible scale of the benefits to SPs, we have estimated the increase in TCP revenues resulting from NCCN 1107. For the purposes of our analysis, we have assumed that all TCPs will implement a charging structure that is very similar to NCCN 1107 and will therefore all see a very similar increase in revenue as BT. As noted above, we consider that other TCPs could introduce similar charges to those contained in NCCN 1107, and would expect others to follow given the significant revenue opportunities involved and the lack of obvious barriers to their introduction.

5.69 We estimate that TCP revenue from T-Mobile and Orange calls to 09 numbers would increase by between £[✂] and £[✂] per annum, depending on the assumptions made about demand and the marginal cost of origination.

5.70 Given the uncertainty surrounding the proportion of the increase in termination revenues that BT and other TCPs would pass-through to SPs, we have not attempted to estimate the benefits to SPs.

5.71 For consumers of 09 calls to benefit from the Indirect effect, it is also necessary that SPs improve the availability or quality of the services they offer. However, for the reasons set out in paragraphs 3.67-3.73, we provisionally conclude that it is not clear that callers will necessarily benefit from NCCN 1107.

Competition effect

Views of the parties

5.72 EE's submissions on the potential risks of competitive distortion resulting from NCCNs 1101 and 1107 are set out in paragraphs 4.113-4.118.

5.73 BT has not made any submissions on issues relevant to the competition effect.

Our views

5.74 EE's NCCN 1101 and 1107 dispute submission raises some issues that we considered in the 08x cases. As noted in Section 3, we believe our findings in relation to these issues in the 0845/70 Dispute to be directly applicable to the current Disputes. Our views on the other issues raised by EE are set out in paragraphs 4.120-4.132.

5.75 On the basis of the available evidence, we do not think the other potential risks considered in the 08x cases or subsequently raised by EE in its submission are likely

to lead to any material distortion of competition. As noted in Section 3, we have not identified any benefits to competition from the introduction of NCCN 1107.

Overall effect on consumers

5.76 Having considered each of the four factors individually, we now set out our assessment of whether NCCN 1107 provides an overall benefit to consumers.

5.77 We consider that EE will have an incentive to reduce most 09 call prices under NCCN 1107, but the magnitude of the Direct effect at these price points is uncertain. In addition, we consider that the available evidence does not allow us to conclude that EE would be incentivised to reduce retail prices down to the bottom rung of the tiered termination schedules in NCCN 1107, and as a consequence MNOs may face a potentially significant increase in termination charges.

5.78 As discussed in paragraph 3.53, we consider that the MTPE is a foreseeable and predictable consequence of NCCN 1107. Additional termination charges payable under NCCN 1107 would have the effect of reducing EE's profits, and we consider that it is likely that this would result in an increase in the prices of mobile services (other than calls to the affected number ranges) through the MTPE (in addition to any effect through a reduction in retail call prices to the affected numbers), to the detriment of mobile customers. Whilst the precise speed and scale of the MTPE is uncertain (in part because it depends on the Direct effect), we consider that it may be significant.

5.79 We have considered whether we should place additional weight on the Direct effect to reflect the externalities we have identified in Section 3 (namely, the alleviation of suppressed or distorted demand, and an improvement in SPs' incentives – see paragraph 3.99). However, we consider that any such additional benefits would only materialise if NCCN 1107 results in significant price reductions. Given our finding in relation to the Direct effect, we consider that it is uncertain whether NCCN 1107 would address these externalities to a material extent.

5.80 We recognise that NCCN 1107 may result in benefits to consumers through the Indirect effect. However we consider the size of any such benefits is highly uncertain. First, the increase in termination revenues to BT and other TCPs from tiered termination rates will depend on the Direct effect. Second, whilst we consider that there may be sufficient competitive pressure on BT (and other TCPs, to the extent that they replicate BT's charges) to ensure that some of the higher termination revenues are passed on over time to SPs, the speed and scale of pass-through is uncertain. Third, the extent to which mobile customers benefit through the Indirect effect depends on the extent to which any additional revenue received by SPs will be passed on to callers. As noted in paragraph 3.74, whilst we recognise that SPs may benefit from increased revenues, we do not consider that this should be a decisive factor, in light of our regulatory duties.

5.81 Given the uncertainty which we have identified as to whether NCCN 1107 will result in a net benefit or net detriment to consumers, and in light of our overriding statutory duties to further the interests of consumers under sections 3 and 4 of the Act,[174] we

[174] Ofcom's principal duty when carrying out its functions is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by

consider that it is appropriate for us to place greater weight on the potential detriments to consumers that might arise from NCCN 1107.

Provisional conclusion on Principle 2

5.82 In conclusion, on the evidence currently before us, we provisionally conclude that Principle 2 is not met in respect of charges under NCCN 1107 for calls to 09 numbers.

NCCN 1102

5.83 The wholesale tariff schedules specified in NCCN 1107 are steeper than those in NCCN 1102. In Section 3, we explain that steeper schedules will tend to increase the likelihood of price reductions, all else equal. Therefore, we would expect the incentives to reduce price under NCCN 1102 to be weaker than under NCCN 1107.

5.84 In relation to NCCN 1107, we find that the magnitude of the Direct effect is inherently uncertain, and so we cannot be confident of the overall impact of NCCN 1107 on consumers. It follows that the magnitude of the Direct effect resulting from NCCN 1102 will also be uncertain, and so we cannot be confident of the overall impact of NCCN 1102 on consumers.

5.85 Although we have not assessed NCCN 1102 to the same level of detail as NCCN 1107, we consider it reasonable to reach the same overall provisional conclusion as for NCCN 1107. The overall effect on consumers will depend on the relative sizes of the Direct effect (which may or may not lead to consumer benefits) and the MTPE (which leads to consumer detriment). Whilst it is possible that consumers may benefit, we cannot rule out the possibility that consumers would suffer harm. In addition, for the same reasons as set out above for NCCN 1107, we do not consider that taking into account externalities, the Indirect effect or competition effects alters our finding that the net effect on consumers of NCCN 1102 could be negative.

5.86 Therefore, in light of our overriding statutory duties under sections 3 and 4 of the Act to further the interests of consumers, we consider that it is appropriate for us to place greater weight on the potential detriments to consumers that might arise from NCCN 1102. Where there is such lack of clarity as to whether introduction of NCCN 1102 will lead to consumer benefits or detriments, we feel that consumers' interests are best served by maintaining the status quo. In conclusion, on the evidence currently before us, we provisionally conclude that Principle 2 is not met in respect of charges under NCCN 1102 for calls to 09 numbers.

Principle 3: Practicality

5.87 In order to find that NCCN 1107 is fair and reasonable we consider that the proposed termination rates must be reasonably practical to implement.

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promoting competition (section 3). Section 4 of the Act requires Ofcom to act in accordance with the six Community requirements (which give effect, amongst other things, to the requirements of Article 8 of the Framework Directive). Section 4 refers in particular to Ofcom's dispute resolution functions under section 185 of the Act.

5.88 The parties made the same points on the practicality in relation to NCCN 1107 as they did in relation to NCCN 1101. These views are discussed in paragraphs 4.141-4.144, along with our assessment of the points that the parties make.

Provisional conclusions

5.89 As discussed in Section 3, the CAT was satisfied, having heard the arguments in the 08x appeals, that it was practical to implement the tiered charges for 080, 0845 and 0870 numbers. Moreover, (most of) the MNOs were able to agree with BT the average charges that were to apply for calculating payments following the CAT's Order. Our starting point is therefore that it should be practical to implement other tiered charges.

5.90 Since the 08x cases, Ofcom has put forward proposals in the context of the NGC review which could have implications for industry arrangements in the longer term. If these proposals are implemented, it is likely that any changes to industry arrangements to give effect to tiered charges would only be in place for a limited period of time.

5.91 We note the charges in NCCN 1107 as compared to those in 08x cases contain a number of charge bands (as discussed in paragraphs 5.5 and 5.6) which may have some implications for their practicality.

5.92 We have received no evidence from the parties to the Disputes that demonstrates that it is not practical to implement the charges set out in NCCN 1107, including any potential distortions on OCPs' choice of transit providers. We therefore provisionally conclude that Principle 3 is passed in relation to the charges in NCCN 1107.

NCCN 1102

5.93 Although we have not assessed NCCN 1102 to the same level of detail as NCCN 1107, we consider it reasonable to reach the same overall provisional conclusion as for NCCN 1107.

Summary of provisional conclusions

5.94 Taking into consideration our assessment across the three Principles, our provisional conclusion is that it is not fair and reasonable for BT to apply the termination charges for calls to the 09 number ranges set out in NCCNs 1107 or 1102.

Section 6

Analysis and Provisional Conclusions for NCCN 1046

6.1 Using the analytical framework set out in Section 3, we set out in this Section our analysis and provisional conclusions as to whether it is fair and reasonable for BT to apply the termination charges set out in NCCN 1046.

6.2 This Section is structured as follows:

- first, we discuss the key features of NCCN 1046;
- we then set out the parties' views, our analysis, and our provisional conclusions, against each of the three principles that form our analytical framework; and
- finally, we set out our provisional conclusions as to whether it is fair and reasonable for BT to apply the termination charges set out in NCCN 1046.

6.3 A number of the issues we consider in relation to NCCN 1046 also apply in the context of NCCNs 1101 and 1107. The discussion of these issues is set out in Section 4. In this Section, we make cross-references to Section 4 as appropriate.

Key features of NCCN 1046

Structure of the wholesale tariff schedules

6.4 NCCN 1046 contains only one termination rate ladder as there is only one BT price point for calls to all 080 numbers (free-to-caller). Whilst the tiered termination rate schedule for calls to 080 numbers is specified by time of day, only the origination payment (applicable when the retail price is zero) differs by time of day. Otherwise, the termination rates applicable at each step are the same irrespective of the time of day.

6.5 As with all of the NCCNs in dispute, the bottom rung of each wholesale tariff schedule is set at the WTC that prevailed prior to the introduction of NCCN 1046.[175] The WTC then increases with the OCP's retail price for calls to the affected number range in a series of steps indefinitely.

6.6 The length of the initial steps is sufficiently greater than their height, such that termination charges increase less rapidly than the retail call price excluding VAT.[176] As a result, the retention per minute (i.e. the retail call price excluding VAT minus the applicable termination charge) available to the MNO increases with each step.

[175] In the case of NCCN 1046, the WTC specified at the bottom rung applies only if the retail price is greater than zero. When the retail price is zero, no WTC applies and an origination payment is made.
[176] The wholesale tariff schedule is specified in terms of retail prices including VAT, but this is not retained by the MNOs.

6.7 Once the retail price reaches 22.5ppm (including VAT), the height of the steps increases. Although the length of the subsequent steps is still generally greater than their height, this is not the case once VAT is taken into account. The termination charge increases by more than the increase in the retail price excluding VAT, meaning that the retention per minute available to the MNO declines with each further step. Therefore, the retention per minute is maximised when the retail price is (just below) 22.5ppm, including VAT.

Principle 1: Cost recovery

6.8 To satisfy Principle 1, the WTCs should not deny MNOs the opportunity to recover their efficient costs of originating calls to 080 number ranges hosted on BT's network.[177]

Views of the parties

6.9 None of the MNOs comment explicitly on the application of Principle 1 to NCCN 1046.

6.10 BT considers that NCCN 1046 complies with Principle 1, as described in the 080 Determination, in two ways:[178]

(i) BT explains that the calculation for deriving the BT charge is based on a 'retail minus' cost model, where the OCP is given a 6ppm allowance for the cost of call origination. BT notes that the Determination on NCCN 956 stated that it would be unlikely for the cost of origination to exceed 5ppm. BT also explains that it has increased the allowance to 6ppm, to take account of H3G, which was not included in the analysis for the 080 Dispute and is likely to have a higher cost base; and

(ii) BT also notes that the starting point for charging at 7.5ppm exceeds the cost of origination and therefore allows the MNO to recover all costs of origination.

Our views

6.11 We do not have reliable information on the MNOs' average retail prices for 080 calls (see paragraphs A3.60-A3.72 in Annex 3). Therefore, consistent with the approach ultimately adopted in relation to NCCN 956 (see paragraph 3.10), we have considered MNOs' retention across the wholesale termination schedule set out in NCCN 1046.

6.12 Table 6.1 sets out the wholesale termination charges and corresponding retail price thresholds for the initial steps in NCCN 1046. Figure 6.1 shows how retention varies across the wholesale termination schedule, up to a retail price of 40ppm including VAT. We consider retention up to 40ppm (including VAT), as this is the highest headline price for calls to 080 numbers reported by the MNOs.

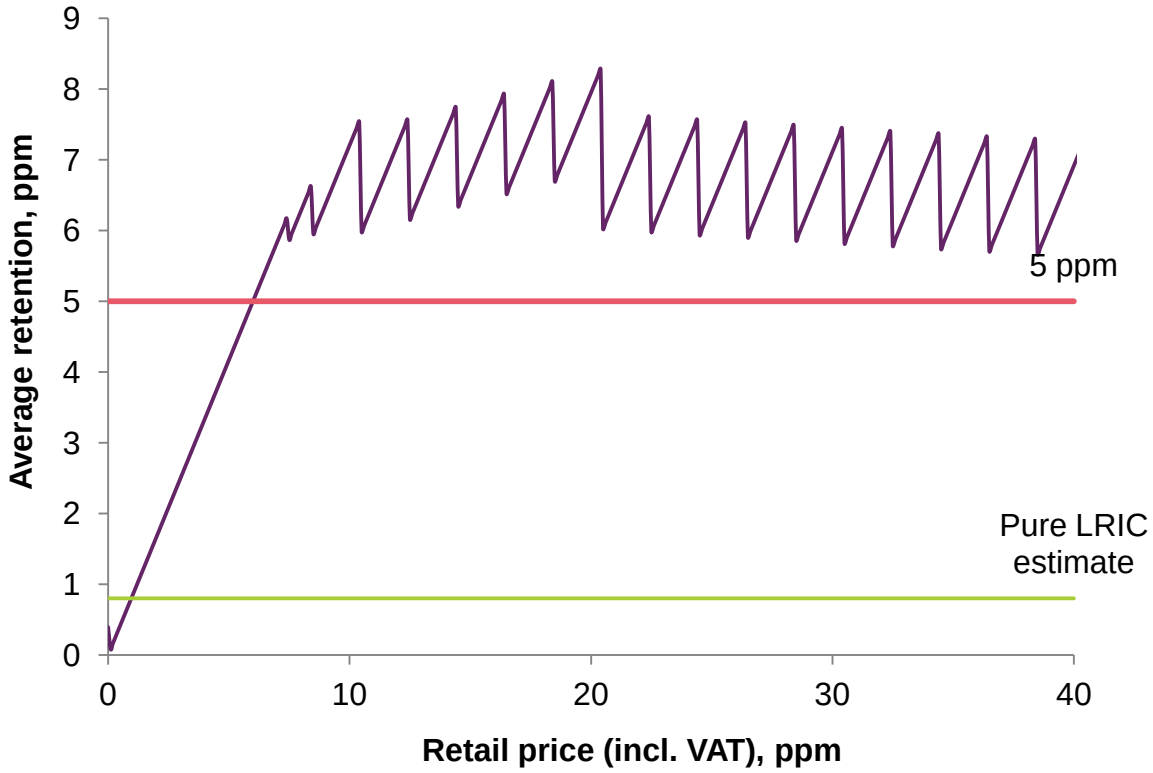
[177] We note that the purpose of the assessment of Principle 1 is not to limit MNOs to cost recovery only, but to ensure the NCCNs at least permit reasonable cost recovery.
[178] BT submission, page 4. Principle 1(i) in the 080 Determination stated that 'it is not fair and reasonable for BT to impose termination charges unless the average retention by each of the 2G/3G MNOs (which is the average retail price minus any termination charge) is greater than the efficient cost of mobile call origination', see 080 determination paragraph 1.19.

Table 6.1: Initial steps in NCCN 1046

WTC, ppm			Retail price (incl. VAT), ppm
Daytime	Evening	Weekend	
-0.6481	-0.2967	-0.2336	p = 0
0.0000	0.0000	0.0000	0 > p < 7.5
0.3800	0.3800	0.3800	7.5 [3] p < 8.5

Source: NCCN 1046.

Figure 6.1: Average retention at different retail prices on 080 calls under NCCN 1046



Source: Ofcom analysis of NCCN 1046.

6.13 If MNOs' average retail prices for calls to 080 numbers are at or above 7.5ppm (including VAT), then a termination charge is payable, which depends on the level of the average retail price. However, for all retail prices above 7.5ppm (including VAT), MNOs are able to cover our estimate of pure LRIC (0.8ppm). In addition, MNOs are also able to make a contribution to common costs, of at least 4.9ppm.[179] This is sufficient to cover our upper estimate of LRIC+, with a contribution to 100% of A&R costs (see Table 3.1).

[179] We have considered retention for retail prices up to 40ppm including VAT. As noted in paragraph 6.7 above, average retention declines from the ninth step. However, average retention remains above 5ppm for all retail prices up to 72.4ppm (including VAT).

6.14 If MNOs' average retail prices for calls to 080 numbers are below 7.5ppm (including VAT), then they are no worse off than they would have been prior to the introduction of NCCN 1046 (i.e. under NCCN 911):[180]

- if MNOs were to set their retail prices for calls to 080 numbers to zero, they would receive an origination payment from BT of between 0.2336 and 0.6481 ppm depending on the time of day, resulting in positive retention. Although this level of retention would be insufficient to cover our estimate of pure LRIC (irrespective of the time of day), we note that MNOs did not receive an origination payment prior to the introduction of NCCN 1046;[181] and

- if MNOs were to set their retail prices greater than zero but less than 7.5ppm (including VAT), they would not receive an origination payment but nor would they incur a termination charge. MNOs' retention is therefore equal to the retention they received prior to NCCN 1046 (under NCCN 911, no WTC applied at any retail price). At a retail price of 0.8ppm (excluding VAT),[182] MNOs are able to cover our upper estimate of the pure long run incremental cost of mobile origination. At prices above this, MNOs are able to make a contribution to common costs, of up to 5.5ppm, as well as covering the LRIC of mobile origination. This is sufficient to cover our upper estimate of LRIC+, with a contribution to 100% of A&R costs (see Table 3.1).

6.15 In Section 3, we explain the different cost benchmarks we could use for the efficient cost of origination, ranging from pure LRIC to LRIC plus a contribution to common costs. Here, we note that in the 080 Dispute, we concluded that the efficient cost of origination for 080 calls on mobile was unlikely to exceed 5ppm. This approach excluded a substantial proportion of customer acquisition, retention and service costs which MNOs considered relevant. We considered that the costs of origination to be recovered needed to be reasonable in the context of the policy preference of having prices of calls to 080 numbers free or as close to free as possible. This consideration meant that the approach of favouring the minimum efficient costs of mobile origination was justified in the context of this dispute.[183]

6.16 We have found that MNOs are able to recover our estimate of the long run incremental costs of call origination. In addition, MNOs are able to make a material contribution to common costs, above our upper estimate of LRIC+, and in excess of what we considered to be reasonable in the 080 Dispute.

6.17 We note that to the extent that the contribution to common costs made by the affected number ranges is smaller under NCCN 1046, we consider it likely that MNOs can recover a significant proportion of these common costs elsewhere in the retail offering. We capture the impact of this on consumers through our assessment of the MTPE, under Principle 2.

6.18 Therefore, we provisionally conclude that NCCN 1046 satisfies Principle 1.

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[180] Taking into account the fact that NCCN 956 has ultimately been set aside NCCN 911 is the NCCN which precedes NCCN 1007.
[181] Under NCCN 911, BT does not make a call origination payment to MNOs for calls to 080 numbers hosted on BT's network.
[182] 0.96 ppm including VAT.
[183] We noted that it was open for MNOs to recover the remaining efficient mobile costs of origination elsewhere in the retail offering.

Principle 2: Effects on consumers

6.19 In this section we consider the four elements which relate to this principle (see Section 3), before setting out our overall assessment of whether the charges in NCCN 1046 are beneficial to consumers.

Direct effect

Views of the parties

MNOs' views

6.20 In summary, the MNOs believe that NCCN 1046 will not benefit consumers. The MNOs therefore believe that Principle 2 of Ofcom's analytical framework is not satisfied.

6.21 EE notes that, as with the 080 Dispute, the OCP will have higher retention with higher retail charges following the introduction of the WTCs in dispute and therefore the OCPs will have an incentive to increase the retail price for 080 calls.[184] EE also alleges that economic evidence provided by BT in the 08x cases did not conclusively demonstrate that the Direct effect of the WTCs in the 08x cases would be more likely to be positive than negative. Furthermore, the theoretical model put forward by Professor Dobbs for BT was not a sufficient basis for drawing any conclusions as to MNOs' future pricing behaviour.[185]

6.22 Vodafone submits that [✂].[186]

6.23 H3G notes that the charges implemented by NCCN 1046 *"may actually have a negative direct effect for both competition and consumers by providing an incentive for OCPs to increase 080 retail charges*".[187]

6.24 O2 does not provide any specific comments on the Direct effect, but does make the general point that it believes *"BT has made no attempt whatsoever to explain how NCCN 1007 could benefit consumers".*[188]

BT's views

6.25 BT believes it has addressed Ofcom's concern in the 080 Dispute that OCPs' retail prices might increase as a result of the WTCs in dispute. BT notes "*there could be no incentive for the affected OCP to adjust their retail charges for 080 in such a way that would be unbeneficial to consumers".*[189] BT explains that the revised WTCs in NCCN 1046 (as compared to those in NCCN 956) "*support the delivery of drivers which would encourage OCPs to move to lower retail charges*".[190]

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[184] EE's NCCN 1046 dispute submission, see paragraph 2.63.
[185] EE's NCCN 1046 dispute submission, see paragraph 2.63.
[186] Vodafone's NCCN 1046 dispute submission, see paragraph 4.8 (ii).
[187] H3G's NCCN 1046 dispute submission, see paragraph 3.
[188] O2's NCCN 1046 dispute submission, see paragraph 21.
[189] BT's response to EE's NCCN 1046 dispute submission, see section 4.
[190] BT's response to EE's NCCN 1046 dispute submission, see section 5.

Our views

6.26 As explained in Section 3, a sensible consideration of pricing incentives needs to account for the likely impact on demand of changes in retail price. Whilst we agree that MNOs have an incentive to increase the price of 080 calls in order to pass on the increase in termination charges, the fact that BT's termination rates now increase in a series of steps as the retail price of a call increases will tend to reduce the incentive for MNOs to increase retail prices and may provide an incentive to reduce prices in order to benefit from a lower termination charge. Which of these incentives dominates will depend in part on the responsiveness of call volumes to a change in the retail price.

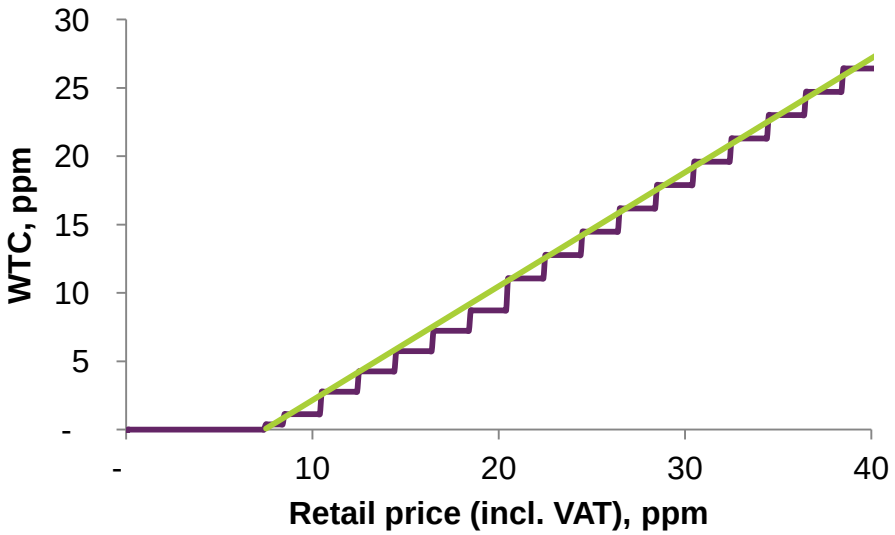
6.27 Similarly, EE's observation that higher retention at higher retail charges means that OCPs will have an incentive to increase retail prices ignores the likely impact on demand.

6.28 In relation to EE's comments on the theoretical model put forward by Professor Dobbs, we accept that the model represents a stylised representation of reality and may not accurately reflect the basis on which MNOs make their pricing decisions. However, we consider that it is useful to inform our assessment of the Direct effect (see paragraphs 3.33-3.38).

Ofcom's view of the Direct effect of NCCN 1046

6.29 We explain in paragraphs 3.28 and 3.29 that there is a clear incentive for MNOs to reduce retail price down to the bottom step if the wholesale tariff schedule lies above the straight line that starts at the end of the bottom step and along which retention is constant. For the schedule specified in NCCN 1046, it is not the case that the entire schedule beyond the bottom step of the ladder lies above this line.

Figure 6.2: Weighted average wholesale tariff schedule for 080 calls under NCCN 1046



Source: Ofcom analysis of NCCN 1046. Note that the retention payment payable to OCPs if the retail price is zero is not shown.

6.30 Figure 6.2 above shows how the termination charge schedule compares to the line along which retention is constant beyond the bottom step. Because the length of the

initial steps is greater than their height, the schedules sit below the line along which retention is constant (even though the schedules are steeper than the line once a certain price is reached).

6.31 In view of this, we consider that there is not an unambiguous incentive to reduce price to the bottom step on the charging ladder irrespective of the responsiveness of call demand to price. As a result, the direction and magnitude of the Direct effect is an empirical question and will in general depend on the structure of the wholesale tariff schedule, the nature of demand for calls to the affected number ranges, and the way in which MNOs respond to the incentives created by tiered termination charges (see Section 3).

6.32 As explained in paragraphs 3.33-3.40, we have used a modified version of the Dobbs 3 model to inform our assessment of the potential impact of the proposed termination charge schedule in NCCN 1046 on MNOs' retail prices for calls to 080 numbers. We have considered the Direct effect on the average retail price for each MNO. We explain our approach, and note some important caveats to this analysis in Section 3 and Annex 3. In paragraphs A3.63-A3.72, we also explain the estimates we have used as proxies for each of the MNOs' average retail prices for 080 calls, in the absence of reliable information from the MNOs. We stress that we are not suggesting that the estimates we have used are necessarily accurate. We note that the range of retail prices we are considering is likely to encompass the actual range of average retail prices. As a result, our assessment of the Direct effect for each MNO captures the potential increase in termination charges faced by the MNOs under NCCN 1046, and the possible incentives they face as a result.

6.33 As noted in paragraph 3.41, we recognise that this model is a stylised representation of reality which may not accurately reflect the actual response of the MNOs to BT's NCCNs in practice. In addition, as explained in Annex 3, we consider that there is considerable uncertainty about the nature of demand for calls to the affected number ranges, and in particular how a change in the applicable retail price might affect the volume of calls originated by an MNO to these numbers. For the purpose of our analysis we have considered two hypothetical demand scenarios (i.e. both linear and constant elasticity demand for calls to the affected number ranges) to illustrate the potential Direct effect of BT's NCCN. We note, however, that we have not seen empirical evidence that would allow us to conclude that either of these assumed demand curves is a good approximation to the actual demand for calls over the relevant price range, or to prefer one form of demand over another.

6.34 For these reasons, we do not consider that reliance can be placed on the precise predictions generated by this model (particularly in relation to the magnitude of the Direct effect). However, we consider this analysis can be used to inform our assessment of the direction of the Direct effect (i.e. whether retail prices for calls to the affected number ranges increase, decrease, or stay the same).

Direction of the Direct effect

6.35 Our analysis indicates that the wholesale termination schedule in NCCN 1046 may create an incentive for the MNOs to reduce retail prices for 080 calls. In particular, our analysis suggests that MNOs have an incentive to reduce retail prices for 080 calls in both the linear and constant elasticity demand scenarios.

6.36 As noted at paragraph 3.40, we have not seen empirical evidence that would allow us to conclude that either the linear or constant elasticity demand curves is a good

approximation to the actual demand for calls over the relevant price range, or to prefer one form of demand over another. Moreover, as noted at paragraph 3.29, we consider that there are some features of the NTS market (notably low price transparency and consumers' resulting lack of price awareness) which may limit the extent to which a reduction in the retail prices for NTS calls is likely to result in an increase in call volumes. If the demand response to a reduction in retail prices is smaller than in the linear and constant elasticity demand scenarios we have considered, this would result in a weaker incentive for MNOs to reduce their retail prices.

6.37 In light of the uncertainty about the nature of the demand for calls to the affected number ranges, we cannot exclude the possibility that the wholesale tariff schedule could result in an increase in 080 call prices. However, we consider that the balance of the available evidence suggests that it is more likely that the MNOs have an incentive to reduce these prices than to increase them. Therefore, we conclude that the direction of the Direct effect is more likely to be positive for consumers than negative.

Magnitude

6.38 As noted above, we do not consider that reliance can be placed on the precise predictions of the Dobbs 3 model, particularly in relation to the magnitude of the Direct effect. We note, however, that in the two demand scenarios we have considered, even if MNOs have an incentive to reduce prices under NCCN 1046, these may only be partial price reductions to a step on the WTC ladder above the bottom step. As a result, MNOs would face higher WTCs than they would prior to the introduction of the NCCN.

MTPE

Views of the parties

6.39 The MNOs are of the general view that NCCN 1046 would have a negative MTPE.

6.40 In particular, EE highlights that "*MNOs are not earning excess profits across the range of services they provide at the retail level and any reduction in the contribution to their overheads from 080 calls will have to be recouped through higher prices for other services or reductions in service levels*".[191]

6.41 Vodafone states that [✂].[192]

6.42 Whilst not addressing the MTPE in isolation, H3G submits that NCCN 1046 is unlikely to benefit consumers, especially when "*Direct, Indirect and Mobile tariff package effects are weighed together*".[193]

6.43 O2 and BT do not specifically comment on any MTPE that NCCN 1046 could have.

[191] EE's NCCN 1046 dispute submission, paragraph 2.65.
[192] Vodafone's NCCN 1046 dispute submission, paragraph 4.8.
[193] H3G's NCCN 1046 dispute submission, see paragraph 15.

Our views

6.44 Our views on the likelihood of the MTPE, and the mechanism through which it might operate, are set out in paragraphs 3.41-3.55 and paragraphs 4.85-4.93.

Assessment of the MTPE resulting from NCCN 1046

6.45 The wholesale tariff schedule specified in NCCN 1046 will reduce the profit earned by MNOs on 080 calls. Additional variable termination charges applicable to these calls will have the effect of reducing MNOs' profits. Even if MNOs try to reduce the termination charges they pay by reducing retail prices, they will still be earning a lower margin per minute due to the lower retail price. This reduction in margin will not be offset by any increase in call volumes resulting from lower call prices because, if this were the case, it would have been profitable for MNOs to reduce retail prices before the termination charges increased.

6.46 As a result, it is likely that the prices for other mobile services would go up through the MTPE. To gauge the potential scale of the MTPE, we have estimated the impact of NCCN 1046 on MNOs' profits on 080 calls under each of the scenarios considered in our assessment of the Direct effect. Our approach to this calculation is set out in more detail in Annex 3.

6.47 Our analysis suggests that the impact of NCCN 1046 on MNOs' profits on 080 calls could be between £[✂] and £[✂] per annum. The reduction in MNOs' profits on 080 calls is significantly greater under the linear demand scenarios than under the constant elasticity demand scenarios:

- in the linear demand scenarios, we find that MNOs have an incentive to reduce prices, but not to the bottom step. Therefore, MNOs' profits are lower as a result of both lower retail prices and an increase in termination charges; and

- in contrast, in the constant elasticity demand scenarios, we find that MNOs have an incentive to reduce prices all the way to the bottom step. Whilst the reduction in prices is therefore greater than under the linear demand scenarios, this is more than offset by the fact that MNOs do not face any increase in the termination charges.

6.48 We note that the profit impact is greater on those MNOs which are assumed to have higher average retail prices prior to the introduction of NCCN 1046.

6.49 These figures do not represent our estimates of the MTPE, as this will depend on the strength of the MTPE and the speed with which it operates. In addition, the impact of the MTPE on consumer welfare will depend on which services, and how many, MNOs choose to increase the prices of. This will affect whether there is an impact on the level of demand for other services in response to the MTPE.

6.50 Because of these sources of uncertainty, we have not attempted to estimate the MTPE, or its impact on consumer welfare. However, given our view that the waterbed effect is significant, the indicative figures above suggest that NCCN 1046 could result in a material negative MTPE on mobile customers.

Indirect effect

Views of the parties

6.51 The MNOs are of the general view that the NCCN 1046 will have no positive Indirect effect.

6.52 In particular, EE states that SPs will not benefit from any proposed changes because the lack of competitive pressure means that there is no incentive for BT to pass through any additional revenues to its SP customers.[194]

6.53 Vodafone comments that if BT believes that NCCN 1046 will result in lower retail charges for 080 calls, then there will be no additional revenue stream to pass through to SPs.[195] Vodafone also states that if there was a new revenue stream from BT as a result of this charge, BT would have to demonstrate not only that the full amount of this revenue was being passed to its SP customers, but also how these SPs "*would use the additional revenues to benefit the consumers of a mobile operator*".[196] Vodafone states that BT has not provided any evidence that would answer either of these points.[197]

6.54 Whilst not addressing the Indirect effect in isolation, H3G submits that NCCN 1046 is unlikely to benefit consumers, especially when "*Direct, Indirect and Mobile tariff package effects are weighed together".*[198]

6.55 BT does not specifically comment on any Indirect effects that NCCN 1046 could have.

Our views

6.56 The 080 number range to which NCCN 1046 relates is not a revenue sharing number range.

6.57 In Section 3, we summarise the approach taken to assessing the Indirect effect in the 08x cases. We also refer to the CAT's observation of the relevance of the Indirect effect to our assessment in those cases. In summary, the CAT considered that the Indirect effect was so minor that it should not have been taken into account at all in our assessment in the 080 and 0845/0870 Disputes.

6.58 In paragraphs 4.100-4.102, we set out our view that TCPs could introduce similar charges to those contained in NCCN 1046, on the basis that they have already introduced tiered termination rates on the 080 number range. In addition, we consider that there are strong incentives for them to do so given the potentially significant revenue gains.

6.59 However, NCCN 1046 relates to a number range that is not intended for revenue sharing purposes, and which is selected by SPs on the basis of its retail price rather than revenue-sharing possibilities. As noted in Section 3, we consider our findings in

[194] EE's NCCN 1046 dispute submission, paragraph 2.66.
[195] Vodafone's NCCN 1046 dispute submission, paragraph 4.11.
[196] Vodafone's NCCN 1046 dispute submission, paragraph 4.12.
[197] Vodafone's NCCN 1046 dispute submission, paragraph 4.12.
[198] H3G's NCCN 1046 dispute submission, paragraph 15.

the 0845/0870 Determination and the CAT's comments in its judgment apply to our assessment of the Indirect effect in the Disputes wherever the disputed NCCNs affect non-revenue sharing ranges. In summary, these findings are that whilst TCPs may compete to attract SPs by passing through some of the higher terminating revenues even in non-revenue sharing ranges (e.g. in the form of lower hosting charges), there is significant uncertainty about whether SPs would respond to this by changing their behaviour to pass through benefits to callers, given that 080 is not a revenue sharing range.

6.60 As a result of this uncertainty, which is in addition to uncertainty surrounding the Direct effect (and therefore the increase in termination revenue), we agree with the CAT that the Indirect effect will not be material. We also note that where it is uncertain that the increased SP revenues will filter through to callers, we consider that greater weight should be placed on the welfare impact on callers for the reasons set out in paragraphs 3.73 and 3.74.

6.61 As a result, we consider that the Indirect effect from NCCN 1046 will not be material and so do not include any measure of the Indirect effect in our estimate of the consumer impact of NCCN 1046.

Competition effect

Views of the parties

6.62 The MNOs are of the general view that the NCCN 1046 will cause material distortions to competition.

6.63 In particular, EE states that higher termination charges would place BT at an unfair competitive advantage in respect to other fixed and mobile operators. This is based on the belief that BT would not pass along the additional revenue gained to the 080 SPs, but would instead "*retain the additional revenues itself and/or would use them to cross-subsidise other products and services*".[199] EE states that this would lead to further distortions in competition.

6.64 EE also submits that TCPs are able to increase termination charges at will, and OCPs are not in a position to act as a competitive constraint on the TCP. EE asserts that in a competitive market, if the TCP increased its termination charges the OCP would switch to a less expensive network. However, as the choice of TCP is made by the SP and the SP is not sensitive to any changes in termination charges, a TCP can increase WTCs at will as the OCP has no competitive constraint to exert.[200]

6.65 Vodafone believes that there is scope for distortions to competition to arise in the wholesale and retail access and origination markets. Vodafone argues that because of the nature of the "ladder" charging arrangements, there will be a differential impact across OCPs according to their variety of tariffs, customer mix and traffic profiles. As a consequence of this, some OCPs would have to take more extensive commercial measures than others in order to mitigate the impact of the termination charges.[201]

[199] EE's NCCN 1046 dispute submission, paragraph 2.74.
[200] EE's NCCN 1046 dispute submission, paragraphs 2.32.1 to 2.32.3.
[201] Vodafone's NCCN 1046 submission, paragraph 4.14.

6.66 Although H3G does not directly link the point to any effect on competition, it argues that the ladder charging structure would be "*inherently discriminatory and unfair"* because different operators are likely to be charged different amounts for an equivalent service.[202]

6.67 O2 and BT do not specifically comment on any potential effects of NCCN 1046 on distortions to competition.

Our views

6.68 In paragraphs 3.74 to 3.90 we set out our views on the elements of the competition effect that are relevant to our analysis, which we consider to apply to all of the disputed NCCNs.

6.69 In the context of the NCCN 1046 Dispute, the submissions by EE, Vodafone and H3G do not raise issues which we have not considered in the 08x cases. In relation to these issues, we refer to our conclusions in the 080 Determination.[203] In that Determination, we noted that BT is not under SMP obligations or any pricing regulation in a market that includes the termination of 080 calls. Furthermore, we noted that for the period relevant to that Determination, no analysis of dominance by BT was undertaken and so there was no finding of dominance (or non-dominance).[204] We noted that, as the dispute was not a Competition Act investigation, it did not consider whether there was an abuse of a dominant position.

6.70 We also noted that firms may choose to offer different trading terms to different trading partners, and there is no general prohibition on this. This needs to be considered on the facts of each case and specifically with regard to the potential for it to result in exclusion and exploitation of trading partners. Setting different termination rates to different MNOs is not in principle *per se* discriminatory. Where MNO A charges a higher retail price than MNO B the former is in a position to pass a greater amount of revenue onto TCPs or NTS SPs (and there are other effects to be considered, such as the Indirect effect and MTPE).

6.71 In this Dispute, we are considering whether the proposed termination charges set out in NCCN 1046 are fair and reasonable, as set out in the published scope of the Dispute. In our view, the same reasoning applies as in the 080 Determination.[205]

6.72 The principles set out in our analytical framework consider (among other things) the effects on consumers from NCCN 1046. So in the course of the Dispute, our analysis considers the effects of applying different termination rates to different MNOs.

6.73 Finally, we note that EE has raised some issues in the context of the Dispute relating to NCCNs 1101 and 1107, which could also apply to NCCN 1046 (see paragraphs 4.113-4.118). To the extent that the issues raised by EE could also apply to NCCN 1046, we consider our views on these issues (set out a paragraphs 4.120-4.132) to apply to NCCN 1046 also.

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[202] H3G's NCCN 1046 submission, paragraph 4.
[203] The 080 Determination, paragraphs 4.51 to 4.54.
[204] The finding of dominance in the NCCN 500 Competition Act decision covered the termination of 080, 0845 and 0870 calls but only related to the (historical) period covered by NCCN 500.
[205] We took the same position in the 0845/0870 Determination, see paragraphs 4.88 to 4.90.

6.74 On the basis of the available evidence, we do not think the other potential risks considered in the 08x cases or subsequently raised by EE in its NCCN 1101 and 1107 dispute submission are likely to lead to any material distortion of competition. We address the points raised regarding transit providers under Principle 3. As noted in Section 3, we have not identified any benefits to competition from the introduction of NCCN 1046.

Overall effects on consumers

6.75 Having considered each of the four factors individually, we now set out our assessment of whether NCCN 1046 provides an overall benefit to consumers.

6.76 We consider that the balance of the available evidence suggests that it is more likely that the MNOs have an incentive to reduce 080 call prices than to increase them. However, we consider that the magnitude of the Direct effect resulting from NCCN 1046 is uncertain. As discussed above, we consider that the available evidence does not allow us to conclude that MNOs would be incentivised to reduce retail prices down to the bottom rung of the tiered termination schedule in NCCN 1046 and, as a consequence, MNOs may face a potentially significant increase in termination charges.

6.77 As discussed in paragraph 3.53, we consider that the MTPE is a foreseeable and predictable consequence of NCCN 1046. Additional termination charges payable under NCCN 1046 would have the effect of reducing MNOs' profits. We consider that it is likely that this would result in an increase in the prices of mobile services (other than calls to the affected number ranges) through the MTPE, to the detriment of mobile customers. Whilst the precise speed and scale of the MTPE is uncertain (in part because it depends on the Direct effect), we consider that it may be significant.

6.78 We have considered whether we should place additional weight on the Direct effect to reflect the externalities we have identified in Section 3 (namely, the alleviation of suppressed or distorted demand, and an improvement in SPs' incentives – see paragraph 3.99). However, we consider that any such additional benefits would only materialise if NCCN 1046 results in significant price reductions. Given our finding in relation to the Direct effect, we consider that it is uncertain whether NCCN 1046 would address these externalities to a material extent.

6.79 As discussed above, we consider the Indirect effect from NCCN 1046 will not be material because it relates to a number range that is not intended for revenue sharing purposes. Therefore, the extent to which TCPs are likely to compete to attract SPs by offering a share of any additional termination revenue is unlikely to be material.

6.80 Given the uncertainty which we have identified as to whether NCCN 1046 will result in a net benefit or net detriment to consumers, and in light of our overriding statutory duties to further the interests of consumers under sections 3 and 4 of the Act,[206] we

[206] Ofcom's principal duty when carrying out its functions is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by promoting competition (section 3). Section 4 of the 2003 Act requires Ofcom to act in accordance with the six Community requirements (which give effect, amongst other things, to the requirements of Article 8 of the Framework Directive). Section 4 refers in particular to Ofcom's dispute resolution functions under section 185 of the 2003 Act.

consider that it is appropriate for us to place greater weight on the potential detriments to consumers that might arise from NCCN 1046.

Provisional conclusion on Principle 2

6.81 On the evidence currently before us, we provisionally conclude that Principle 2 is not met in respect of charges under NCCN 1046 for calls to 080 numbers.

Principle 3: Practicality

6.82 In order to find that NCCN 1046 is fair and reasonable we consider that the proposed termination rates must be reasonably practical to implement.

Views of the parties

6.83 The MNOs have raised similar arguments regarding practicality as were raised in the 080 Dispute. The MNOs believe that it is not reasonably practical to implement the charges set out in NCCN 1046. We summarise the MNOs' arguments below.

(i) Difficulties in calculating average retail price and billing systems

6.84 There is consensus between the MNOs that it is extremely difficult to calculate an average retail price on which the termination charges can be based. EE noted that this was particularly the case in relation to zero rated 080 numbers and stressed that "*zero-rated calls must be entirely excluded from any form of termination charge, otherwise OCPs would be incentivised to charge for those calls".*[207]

6.85 There also seems to be consensus amongst the MNOs that current billing systems would not support the implementation of NCCN 1046.

- Vodafone argues that its current billing system is unable to distinguish between calls to BT and non-BT terminated 080 numbers and that therefore additional resource would be required to create and maintain an entirely new internal reporting system;[208]

- H3G also claims that its billing systems are unable to distinguish between calls to BT and non-BT terminated 080 numbers, noting that the situation is further complicated by the porting between TCPs of 080 numbers and 080 calls originating on H3G's international roaming partners;[209]

- EE notes that for NCCN 1046 to be implemented "*the scale of investment required would be very significant"*,[210] and

- O2notes that the cost of implementing NCCN 1046 is *"not insignificant and may be significant".*[211]

[207] EE's NCCN 1046 dispute submission, paragraph 2.91.
[208] Vodafone's NCCN 1046 dispute submission, paragraph 4.15.
[209] H3G's NCCN 1046 dispute submission, paragraph 21.
[210] EE's response to question 2 of the first s191 notice NCCN 1046 Dispute.

(ii) Unforeseen effects

6.86 H3G, EE and Vodafone argue in their submissions that there may be unforeseen consequences of the operation of the termination charges.

6.87 EE refers to the 0845/0870 Determination where Ofcom had acknowledged that the introduction of tiered termination charges is a significant change to industry convention and previous regulatory practice.[212] EE also comments that "*it would be wholly inappropriate for such a seismic shift in policy approach to be brought about in the context of a dispute rather than in the context of a comprehensive market review".*[213] EE also highlights that there would be an obvious risk of unlawful exchange of pricing information between MVNOs and MNOs.[214]

6.88 Vodafone claims in its submission that tiered pricing *"may create uncertainty for originating operators and further undermine the case for pricing innovation*".[215]

6.89 In BT's view, the *"OCPs should be able to implement these terms provided they are willing to assess an averaged retail charge for calls to BT's 080 numbers*".[216] BT suggests the fact that five TCPs are already applying these principles in their pricing for calls to 080 and 0845/0870 numbers is evidence that it is practical to implement.[217]

Our views

6.90 As discussed in Section 3, the CAT was satisfied, having heard the arguments in the 08x appeals, that it was practical to implement the tiered charges for 080, 0845 and 0870 numbers. Moreover, (most of) the MNOs were able to agree with BT the average charges that were to apply for calculating payments following the CAT's Order. Our starting point is therefore that it should be practical to implement other tiered charges.

6.91 Since the 08x cases, Ofcom has put forward proposals as part of the NGC review, as discussed at paragraphs 2.29-2.33, which could have implications for industry arrangements in the longer term. If these proposals are implemented, it is likely that any changes to industry arrangements to give effect to tiered charges would only be in place for a limited period of time.

6.92 We have received no evidence from the parties to the Disputes that demonstrates that it is not practical to implement the charges set out in NCCN 1046, including any potential distortions on OCPs' choice of transit providers. We remain of the view, set out in the 080 Determination, that each MNO should be in a position to estimate its own average retail price to an acceptable degree of accuracy and subject to a reasonable verification procedure. Whilst further negotiation is clearly required as

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[211] O2's response to Ofcom dated 19 November 2012. O2's earlier response on this issue was made in 2010 where it noted, in response to question 2 of the first s191 notice NCCN 1046 Dispute, that in relation to the cost of putting in place systems to implement NCCN 1046, "*our assumption is that these are unlikely to be significant*".
[212] EE's NCCN 1046 dispute submission, paragraph 2.92.
[213] EE's NCCN 1046 dispute submission, paragraph 2.93.
[214] EE's NCCN 1046 dispute submission, paragraph 2.86.
[215] Vodafone's NCCN 1046 dispute submission, paragraph 4.2. It reiterates this point in its response to our second section 191 Notice and in its letter of 24 August 2012 following the CoA Judgment.
[216] BT's NCCN 1046 dispute submission, paragraph 3, section 6.
[217] BT's NCCN 1046 dispute submission, see paragraph 3, Section 6.

between the parties, we do not consider that this means that the charges are not practical to implement.

Provisional conclusions

6.93 We provisionally conclude that Principle 3 is passed in relation to the charges in NCCN 1046.

Summary of provisional conclusions

6.94 Taking into consideration our assessment across the three Principles, our provisional conclusion is that it is not fair and reasonable for BT to apply the termination charges for calls to 080 numbers hosted on its network that are set out in NCCN 1007, as corrected by NCCN 1046.

Section 7

Summary of submissions on the Provisional Conclusions and Ofcom's response

7.1 We received responses to the Provisional Conclusions from BT,[218] EE, H3G, O2, Vodafone and [✂]. Annexed to BT's response were two reports it commissioned from Professor Dobbs (referred to as the "Dobbs report") and DotEcon (referred to as the "DotEcon report"). BT has more recently also sent us a report setting out its Monte Carlo analysis (referred to as the "Monte Carlo analysis").[219]

7.2 The MNOs and [✂] broadly support our Provisional Conclusions whilst BT considers we have reached the wrong Provisional Conclusions. Whilst there is broad support from all respondents for the analytical framework we have applied, we received a range of comments on our analysis.

7.3 Whilst most of the issues raised by respondents are relevant to all three of the NCCNs in dispute, there are in addition some comments that relate to individual NCCNs. In this Section we address the issues raised by stakeholders that are common to all three NCCNs in dispute under the following headings:

- The 08x cases;
- Principle 1;
- Principle 2; and
- Principle 3.

7.4 Where relevant, we respond to comments that relate to individual NCCNs under each of these headings.

The 08x cases

7.5 BT, H3G and EE comment on issues which relate to the 08x cases and the ongoing litigation of these cases. We discuss the main points raised in the following sub-sections.

[218] [✂] did not submit a response to the Provisional Conclusions, however it informed us that it provided some assistance to BT and as such it is likely that [✂] views will be aligned with those of BT in many places. In an email to us 4 January 2013, [✂] notes that the Provisional Conclusions seem to omit the effect of the CAT Judgment and how that relates to the Direct and Indirect effects used in the analysis.

[219] BT indicated in its response of 4 January 2013 to the Provisional Conclusions (page 4) that it had not had sufficient time to undertake all the work it wished to. On 13 March 2013, BT sent us its Monte Carlo analysis. Notwithstanding the late provision of this report, we have taken account of it in reaching to our final conclusions.

Regulatory absence

Views of the parties

7.6 BT considers[220] that Ofcom has misinterpreted the CAT Judgment and the CoA Judgment by not including a discussion on "regulatory absence."[221] BT notes that "regulatory absence" is one of the major points of contention in the 08x cases, which BT also raised in its appeal to the Supreme Court. BT believes, based on the Access and Framework Directives and ECJ case law, that regulatory absence is an important consideration that Ofcom should take account of, and encourages Ofcom to set out how it has applied the CoA Judgment to the facts in the Disputes.[222]

7.7 BT raises a similar point through the DotEcon report. DotEcon criticises Ofcom for adopting a strong *ex ante* approach to promoting competition, whereby Ofcom is anticipating the possibility of possible adverse effects and then placing an *ex ante* restriction on the allowed form of competition amongst TCPs. DotEcon suggests that Ofcom should consider the alternative approach of allowing wholesale tariff innovation and then intervening *ex post* if any of the adverse effects occur. DotEcon considers that Ofcom is restricting competition (by disallowing the NCCNs) and that restricting competition is only justified if there is a significant risk of adverse impacts which cannot be rectified *ex post*.[223]

7.8 In contrast with BT, H3G considers the absence of any *ex ante* restriction is a neutral factor that can have no impact on the resolution of disputes.[224]

Our views

7.9 The CoA Judgment considered Ofcom's dispute resolution powers.[225] It confirmed the CAT's view from the earlier *TRD* case[226] that dispute resolution is a third potential regulatory restraint that operates in addition to other *ex ante* obligations and *ex post* competition law and should be considered an appropriate way by which Ofcom ensures that the objectives set out in sections 3 and 4 of the 2003 Act are fulfilled.[227] Because of Ofcom's role as regulator, Ofcom must always consider whether the position arrived at on a consideration of the rival parties' contentions is one which accords with the regulatory objectives of the EU Framework, as set out in Article 8 of the Framework Directive, and its task is to impose a solution that meets these public policy objectives.[228]

7.10 The CoA recognised that *ex ante* regulation is limited in scope and that *ex post* regulation is in some respects a powerful constraint on the activities of undertakings, but that *"this is not of any particular use in regulating a market such as that of*

[220] BT response to our Provisional Conclusions, page 1 and 2.
[221] "Regulatory absence" in this context relates to the use of Ofcom's dispute resolution powers and how these link with Ofcom's regulatory functions. BT argues that Ofcom is restricting competition by disallowing the NCCNs and is seeking to use its dispute resolution powers to impose an *ex ante* restriction on BT in the absence of significant market power.
[222] BT's response to our Provisional Conclusions, page 1.
[223] DotEcon report, paragraphs 49-53, and 128.
[224] H3G's response to our Provisional Conclusions, page 1.
[225] CoA Judgment, paragraph 58-63.
[226] CoA Judgment, paragraph 59.
[227] CoA Judgment, paragraph 61.
[228] CoA Judgment, paragraphs 61 and 63.

electronic communications, especially one which is so active and fast-developing as that involving mobile telephones". Hence there is a need for the regulator to have power to resolve disputes between relevant undertakings with its regulatory objectives in mind, rather than merely as a sort of commercial arbitrator. [229]

7.11 The CoA considered that the CAT had paid no more than 'lip-service' to this aspect of Ofcom's regulatory functions and therefore failed to recognise that the dispute resolution function is, in itself, part of the regulatory responsibility for ensuring connectivity. The CoA stated that it did "*not understand why the Tribunal took the view that the fact that the particular area of market operations is not constrained by ex ante regulation is an "important indicator" that, although it is affected by the particular form of regulation represented by dispute resolution, nevertheless that aspect of regulatory control should not be exercised so as to interfere with a price set by a CP who is in a position (as BT is) to set it contractually*". The CoA (Lloyd LJ) disagreed with the CAT's view, which he considered to be wrong in principle.[230] The CoA considered that as a result, the CAT had failed to give proper effect to Article 20 of the Framework Directive (in particular Article 20.3) and to section 4 of the 2003 Act, under which Ofcom must, in resolving a dispute, aim to achieve the relevant regulatory objectives.[231]

7.12 Therefore, while we note that BT disagrees with the CoA's position on how the absence of regulation should be treated (and has appealed the CoA's decision to the Supreme Court), we consider that the CoA's position represents the law as it currently stands and that it is appropriate for us to follow this approach when resolving the Disputes.

Onus on party proposing change to justify it

Views of the parties

7.13 BT disagrees with the CoA Judgment which found that the onus should be on the proponent of a change to show that the change is fair and reasonable[232]. BT believes that in a market which is not regulated, the burden is on the party resisting the change (the MNOs in these Disputes), to demonstrate that the change is contrary to the objectives set out in the EU Telecommunications Directives.[233]

7.14 H3G[234] notes that the onus is clearly on BT to demonstrate that the charges in dispute are fair and reasonable. EE raises a related argument specifically in relation to Principle 3, which is discussed in the section concerning Principle 3.

Our views

7.15 Ofcom considers that the CoA Judgment was clear as regards the onus of showing that a change is fair and reasonable. Citing the earlier TRD case, the CoA reiterated that "*the onus [is] with the party proposing the variation to provide to the other party and to Ofcom the justification for changing the previous charges [and] Ofcom should*

[229] CoA Judgment, Paragraph 79.
[230] CoA Judgment, Paragraph 79.
[231] CoA Judgment, paragraph 80.
[232] See CoA Judgment, paragraph 92.
[233] BT response to our Provisional Conclusions, pages 1 and 2.
[234] H3G response to our Provisional Conclusions, page 2.

first examine the reasons for the changes to determine whether they are justified as being fair between the parties and reasonable from the point of view of the relevant regulatory objectives."[235]

7.16 Given the similarities between the Disputes and those considered in the 08x cases, we believe that it is appropriate to follow the approach articulated in the CoA Judgment, namely that "*there is no good reason to reverse the burden and to relieve the proponent of the change… of the need to show that the change is fair and reasonable, in the sense explained in the TRD case."*[236]

Principle 1

7.17 Only EE and H3G comment on our analysis of Principle 1. In summary, EE believes that none of the NCCNs wholly satisfy Principle 1, as EE's average retention on certain number ranges and at certain key price points would fall below the level which Ofcom has considered reasonable in the context of the NGCS review.[237] H3G argues that the cost of origination should be set at 3.0ppm or above, for the reasons set out in its response to Ofcom's NGCS review April 2012 consultation.[238] BT, O2, Vodafone[239] and [✂] do not comment specifically on Principle 1.

7.18 We first address the responses relating to the efficient cost of mobile call origination, before responding to EE's comments in relation to individual NCCNs.

Efficient costs of mobile call origination

Views of the parties

7.19 EE argues that for the purposes of assessing Principle 1, we should take into account the fact that MNOs are entitled, and ultimately need, to recover a proportion of their fixed and common costs from customers via their charges. Whilst acknowledging that we considered a range of costs of origination, ranging from pure LRIC to LRIC+, EE states that *"Ofcom appears to be content to regard Principle 1 as satisfied provided only that the weighted average retention across all number ranges covered by the NCCN in question and across the T-Mobile and Orange brands is higher than pure LRIC*".[240]

7.20 EE notes that for the purposes of the Impact Assessment in the NGCS review, we adopted an assumption of a mobile origination charge of 2.5ppm to 3ppm for 080 calls. EE argues that it would be inconsistent to regard the NCCNs as fair and reasonable if they do not permit MNOs at least this level of retention.[241]

7.21 H3G requests that we take account of its response to the NGCS review April 2012 consultation, where it explained why the estimates of mobile call origination costs

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[235] CoA Judgment, paragraph 61.
[236] CoA Judgment, paragraph 92.
[237] EE's response to our Provisional Conclusions, pages 1 and 2.
[238] H3G's response to our Provisional Conclusions, page 2.
[239] Vodafone does not comment further on Principle 1 because it does not believe Ofcom's Provisional Conclusions on this matter to be determinative in this case (Vodafone response to ourProvisional Conclusions, footnote 1).
[240] EE's response to our Provisional Conclusions, paragraph 11.
[241] EE's response to our Provisional Conclusions, paragraph 12.

presented in that consultation (and used in the Provisional Conclusions) were too low, and why the cost of origination should be set at 3.0ppm or above.[242]

Our views

7.22 We do not accept EE's view that we base our assessment of Principle 1 on whether the weighted average retention across all number ranges covered by the NCCN in question and across the T-Mobile and Orange brands is higher than pure LRIC. As we explain in paragraph 3.14 above, the average retention on calls to the affected number ranges must, at a minimum, allow MNOs to recover the long-run incremental cost of call origination. However, we also recognise that it may be appropriate for MNOs to obtain a level of retention on the affected number ranges that allows for some contribution to fixed and common cost recovery.

7.23 As explained in paragraphs 3.15-3.17, we have considered a range of cost benchmarks that vary in the extent to which they include a contribution to fixed and common costs over and above the long run incremental cost of call origination. This range includes pure LRIC (at 0.7-0.8ppm[243]) up to LRIC+ with 100% of customer acquisition and retention costs (at 4.0ppm).[244] We note that the mobile call origination cost of [✂] referred to by EE and the 3.0ppm cost estimate suggested by H3G both lie within the range of cost benchmarks we have considered.[245]

7.24 Moreover, as we noted in paragraph 3.17 above, our views on Principle 1 are in any case unlikely to change even if the efficient cost of originating an NTS call from a mobile was materially higher. This is because our approach to assessing Principle 1 involves, where relevant, consideration of whether MNOs could recover the efficient costs of call origination by adjusting their retail prices in order to increase the level of retention they receive from calls to the affected number ranges under the NCCNs (see paragraph 3.13 above).[246]

NCCNs 1101 and 1107

Views of the parties

7.25 EE argues that in applying Principle 1, there is no reason to consider the weighted average retention across all number ranges covered by the NCCN in question.[247] It

[242] H3G's response to our Provisional Conclusions, page 2.
[243] This estimate was taken from our NGCS review April 2012 consultation. In light of comments received in response to that consultation, we now believe that 0.8-0.9ppm provides a reasonable estimate of the marginal cost of originating a call. Using this revised estimate would not affect our analysis of Principle 1.
[244] See Table 3.1 in Section 3 above.
[245] We do not consider the particular assumption which EE refers to (see paragraph 7.20), to be relevant to our assessment of Principle 1 in the Disputes. In the first instance, this is because the assumption we made in the NGCS review was derived from the application of all three Principles together. The cost estimates used to assess Principle 1 in the NGCS review were wider than the range EE presents and were similar to those used in the Disputes, ranging from pure LRIC to LRIC+(no A&R). In any event, the context in which we applied the three Principles in the NGCS review was very different to the context of the Disputes. In particular, the purpose of our NGCS assessment was to make an assumption about the likely impact of our free-to-caller proposal on mobile origination payments for 080 calls. In applying the three Principles in this context, we therefore had regard to the special nature of the 080 number range and to maximising the consumer benefits from our proposal to make the number range free-to-caller.
[246] [✂].
[247] Although EE's argument is not raised in relation to a specific NCCN, we understand it to relate to our assessment of NCCNs 1101 and 1107, rather than NCCN 1046.

argues that a charging structure that leaves EE with insufficient retention to cover its costs of origination on some number ranges and some brands should not satisfy Principle 1. Specifically:

- In relation to NCCN 1101, EE argues that its [✂].[248] EE acknowledges that NCCN 1101 permits EE to retain revenue [✂].[249]

- In relation to NCCN 1107, EE refers to Table 5.2 in our Provisional Conclusions, which shows that [✂].[250]

7.26 EE therefore submits that NCCNs 1101 and 1107 fail to satisfy Principle 1.

Our views

7.27 In the Provisional Conclusions, we assessed whether EE's retention at each price point under the NCCN is sufficient to cover at least the pure long run incremental costs of providing call origination.[251] [✂], we went on to show in paragraph 5.24 of the Provisional Conclusions that a number of other retail prices exist for calls to these numbers where retention is greater than or equal to LRIC.

7.28 We then considered whether the NCCN permits a contribution to common costs, looked at from across all of the price points covered by that NCCN. Our decision to consider the weighted average retention across all of the price points covered by an NCCN, rather than the retention at each individual price point (or each individual charge band in the case of NCCN 1101), reflects the fact that these costs are common (i.e. shared between services in the sense that they are not incremental to each service considered individually). Common costs may be reasonably allocated between the combination of services to which they are causally related in many different ways. Whilst it may be appropriate for MNOs to obtain a level of retention on the affected number ranges that allows for some contribution to these common costs (see paragraph 3.14 of the Provisional Conclusions), EE does not explain why the common costs need to be recovered in equal proportion across all of the price points covered by an NCCN. Therefore, we remain of the view that the average level of common cost recovery permitted under the NCCNs is most relevant to our assessment of Principle 1 and that considering common cost recovery on the basis of the weighted average retention across all of the price points covered by the relevant NCCN is appropriate.

7.29 In any event, even if we were to adopt EE's proposed more granular approach to assessing Principle 1, we would still find that NCCNs 1101 and 1107 satisfy Principle 1. This is because our assessment of Principle 1 is not limited to considering the level of retention at prevailing retail prices. As explained in paragraph 3.13 of the Provisional Conclusions, we consider it appropriate, where relevant, to consider whether MNOs could recover the efficient costs of call origination by adjusting their retail prices in order to increase the level of retention they receive. In other words, if

[248] EE's response to our Provisional Conclusions, paragraph 65. [✂] See paragraph 4.16 of the Provisional Conclusions.
[249] *Ibid.*
[250] EE's response to our Provisional Conclusions, paragraph 69.
[251] In paragraphs 4.21 and 5.20 of the Provisional Conclusions, we explained why we assessed EE's retention under NCCNs 1101 and 1107 by calculating the average retention that EE earns at each T-Mobile and Orange price point within the affected number ranges.

MNOs cannot recover the efficient costs of call origination at prevailing retail prices, we consider whether they can do so by adjusting their retail prices.[252]

7.30 We have looked at the 0843/4 individual charge bands referred to in EE's response to the Provisional Conclusions (see the first bullet point of paragraph 7.25), and find that EE could earn retention above our upper estimate of LRIC+, with a contribution to 100% of A&R costs, by adjusting the retail prices for calls to these charge bands:

- The retention available to EE at the top of the step which corresponds to EE's current retail price for Orange calls to the g6 charge band is [✂]ppm.
- The retention available to EE at the top of the step which corresponds to EE's current retail price for Orange calls to the g11 charge band is [✂]ppm.

7.31 We have also looked at the 09 price points referred to by EE where its average retention at prevailing retail prices is below [✂] (see the second bullet point of paragraph 7.25). We find that EE could earn a retention above our upper estimate of LRIC+, with a contribution to 100% of A&R costs, by adjusting the retail prices for calls to these charge bands:

- Two of these price points – [✂] – are specifically discussed in paragraphs 5.23-5.24 of the Provisional Conclusions, as EE's retention at prevailing retail prices was also below our LRIC estimate. EE could earn retention on these two charge bands of at least [✂], if it increased prices to the top of the steps which correspond to its current retail prices (see paragraph 5.24 of the Provisional Conclusions).
- The other price point is [✂]. The retention available to EE at the top of the step which corresponds to EE's current retail price for T-Mobile calls to this charge band is [✂] ppm.

7.32 Therefore, we disagree that the NCCNs will leave EE with insufficient retention to cover its costs of origination on some number ranges and some brands, and confirm our provisional conclusion that NCCNs 1101 and 1107 satisfy Principle 1.

NCCN 1046

Views of the parties

7.33 In relation to NCCN 1046, EE considers that BT should make an origination payment to EE for any calls to 080 numbers that are "free to caller" at a level such that the origination payment is sufficient to cover the efficient costs of originating a call on a mobile network. Therefore, EE argues that Principle 1 is not satisfied, as it is not possible for it to recover its efficiently incurred costs of origination at all points in the tariff schedule. Specifically:

- at a zero price, it would receive an origination payment of 0.2967ppm[253], which is significantly below even the pure LRIC measure, and the 2.5-3ppm that Ofcom considered reasonable in the NGCS review;[254] and

[252] We note that none of the parties, including EE, have commented on this aspect of our approach in their responses to our Provisional Conclusions.

- at low non-zero prices, no origination payment is payable, meaning that EE's retention could fall below pure LRIC or any reasonable estimate of its efficient costs of origination.[255]

Our views

7.34 In paragraph 6.14 of the Provisional Conclusions, we recognised that if MNOs were to set their retail prices for calls to 080 numbers to zero, the origination payment from BT would be insufficient to cover our estimate of the pure long run incremental cost of mobile origination. We also recognised that MNOs are only able to cover our upper estimate of pure LRIC at retail prices at or above 0.8ppm (excluding VAT). At prices above 0.8ppm (excluding VAT), MNOs are able to make a contribution to common costs, of up to 5.5ppm. Therefore, we accept that MNOs may not be able to recover their efficient costs of origination at low prices. However, as we explained in paragraph 6.14 of the Provisional Conclusions, MNOs are no worse off than they would have been prior to the introduction of NCCN 1046 (we also note that under NCCN 1046 MNOs would receive an origination payment at a retail price of zero that would not apply under NCCN 911).

7.35 Moreover, at retail prices above 7.5ppm (including VAT), MNOs are able to recover our estimate of pure LRIC, and make a contribution to common cost which is above our upper estimate of LRIC+, with a contribution to 100% of A&R costs. Whilst we do not have reliable information on the MNOs' average retail prices for 080 calls, the information we do have on MNOs' average retail 080 prices (see paragraph A3.70 below) suggests that these are significantly in excess of the range we have considered for the efficient marginal cost of origination (see Table 3.1 in Section 3 above). Notwithstanding the MNOs' concerns about the accuracy of their average retail 080 price estimates (see paragraph A3.71 below), we therefore consider it likely that MNOs are able to recover their efficient costs of origination at prevailing retail prices. In addition, we note that EE (as well as the other MNOs) argues that NCCN 1046 does not result in an incentive to reduce average retail prices for 080 calls down to the bottom step of the wholesale tariff schedule, suggesting that it should be able to recover its costs.

7.36 Given that MNOs are able to recover our estimate of the LRIC of call origination and make a contribution to common costs which are above our upper estimate of LRIC+, we confirm our provisional conclusion that NCCN 1046 satisfies Principle 1.

Overall conclusions

7.37 Our analysis in this investigation has led us to conclude that, in relation to each of NCCNs 1101, 1107[256] and 1046, the introduction of those NCCNs would not prevent the MNOs from recovering their costs of call origination. We therefore conclude that Principle 1 is satisfied in relation to each of the three NCCNs.

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[253] EE does not explain why it refers only to the evening rate (see Table 6.1).
[254] EE's response to our Provisional Conclusions, paragraph 15, page 7 and paragraph 73.1, page 31.
[255] EE's response to our Provisional Conclusions, paragraph 73.2, page 32.
[256] It follows that NCCN 1102 will satisfy Principle 1.

Principle 2

7.38 All respondents commented on Principle 2. Broadly, BT does not agree with aspects of our framework, our analysis and the provisional conclusions we have reached. Much of BT's comments are contained within the Dobbs report[257], the DotEcon report and the Monte Carlo analysis. The MNOs and [✂] agree with the framework we have applied and the provisional conclusions we have reached, and comment on aspects of our analysis.

7.39 Our discussion on Principle 2 follows the same format as used in Sections 4 to 6 and is set out as follows:

- Direct effect;
- MTPE;
- Indirect effect
- Competition effect; and
- Overall effect on consumers.

Direct effect

7.40 Respondents' comments on our assessment of the Direct effect mostly relate to our theoretical assessment using the modified Dobbs 3 model. As set out in the Provisional Conclusions, our theoretical assessment supplements our assessment of the structure of each NCCN in question. We noted the considerable uncertainty surrounding the model and as a result we do not rely on the precise predictions generated by the model, particularly in relation to the magnitude of the Direct effect. Instead, we use the model to explore the likely direction of the Direct effect by considering a range of scenarios.[258]

7.41 We address respondents' comments under the following headings:

- BT's incentives in introducing tiered charges (paragraphs 7.42-7.44);
- Evidence on actual price movements (paragraphs 7.45-7.49);
- Elasticity of demand (paragraphs 7.50-7.80);
- Shape of the demand curve (paragraphs 7.81-7.86);
- Weighted average tariffs (paragraphs 7.87-7.91);

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[257] On 15 January 2013 BT sent us a version of Professor Dobbs' report which was slightly revised to that which was submitted on 4 January 2013. In the version of 15 January 2013, VAT was included in the MTPE calculations. There was however, no explanation as to why such an amendment has been made. Our quantitative analysis includes VAT when calculating MTPE, therefore the results of our analysis remain unchanged if we were to take account of the 15 January 2013 version.

[258] In its response to our Provisional Conclusions, EE states that we relied upon the modified Dobbs model to seek to predict the direction and magnitude of the Direct effect (paragraph 15). For the avoidance of doubt, we do not agree with this statement.

- Marginal cost of origination (paragraphs 7.92-7.93);
- Dilution effects (paragraphs 7.94-7.100);
- Sources of uncertainty in the Direct effect (paragraphs 7.101-7.107);
- Treatment of VAT (paragraphs 7.108-7.110); and
- Results of the theoretical assessment (paragraphs 7.111-7.122*).*

BT's incentives in introducing tiered charges

Views of the parties

7.42 O2 and H3G argue that we should consider BT's incentives in introducing the tiered termination charges in the assessment of MNOs' likely retail pricing responses to the charges. Specifically, they argue that BT introduced the wholesale tiered charging schemes to increase revenues through higher wholesale charges, and so did not design them to incentivise mobile operators to reduce retail prices to the lowest rung of each ladder.[259] O2 also argues that BT is in a unique position to make well informed judgements about MNOs' likely responses to wholesale price changes, given its position in the non-geographic number markets.[260]

Our views

7.43 We do not consider BT's motives for introducing tiered termination charges to be relevant to our analysis and that they are not a factor that we should take into account when assessing whether the Disputed NCCNs are fair and reasonable.

7.44 We note that this is consistent with the position we put forward to the CAT in the 08x cases, as recorded in paragraph 273 of the CAT Judgment: *"The case that is put to the Tribunal has to be assessed on its own merits, and it is absolutely not the case that this is an investigation of motivation at the time"*. We also note that the CAT agreed with this position and said that the question to be resolved was *"whether the NCCNs satisfy whatever is the correct legal test for their introduction",* and added that the *"test must be an objective one, and that BT's subjective motivation… in introducing the NCCNs is essentially irrelevant".*[261] We note that the CoA did not specifically consider this point.

Evidence on actual price movements

Views of the parties

7.45 Professor Dobbs suggests that it would be of some interest to examine empirical evidence on the actual retail price changes that have occurred following the introduction of tiered termination charges for the number ranges involved in the 08x

[259] O2's response to our Provisional Conclusions, page 2; H3G's response to our Provisional Conclusions, page 2.
[260] O2's response to our Provisional Conclusions, page 3.
[261] CAT Judgment, paragraph 274.

cases and the Disputes, and in particular to examine whether retail prices for the relevant 08x calls have fallen.[262]

7.46 Professor Dobbs acknowledges that the fact that the 08x cases are still the subject of litigation makes inferring anything from actual price movements problematic as MNOs have an incentive not to respond to the imposed charges by reducing retail prices.[263] He considers that *"it follows that perhaps the only case where we can be sure the empirical evidence might count as significant is when MNOs actually reduce their retail prices and they subsequently remain lower (whilst tiered charges are in force)".*[264]

Our views

7.47 We do not consider that changes in retail prices following the introduction of tiered charges for the number ranges in the 08x cases or the Disputes can be used to make robust inferences about the likely retail response of MNOs to the NCCNs in dispute.[265]

7.48 As Professor Dobbs notes, given the MNOs disputed the charges in the 08x cases, any price responses by MNOs following the introduction of NCCNs 911, 985 and 986 are not necessarily reflective of an outcome where the tiered charges are not disputed. Moreover, in addition to the complications identified by Professor Dobbs, we note that price changes observed may also be the result of other considerations unrelated to the proposed NCCNs.[266]

7.49 In relation to price changes in the number ranges affect by the NCCNs in the Disputes, we consider that similar considerations apply. [✂].[267] Therefore, the basis on which MNOs are setting their prices is unclear.

Elasticity of demand

Views of the parties

7.50 Professor Dobbs argues that we have not provided any evidence to rule out the possibility that retail demands are inelastic, nor any rationale for ruling out the possibility that retail demands are significantly inelastic. He considers that our analysis should look at the possibility (and in his view, the probability) that demand for calls to the affected number ranges by an MNO's customers is inelastic.[268] Specifically, he argues that it is appropriate to consider a range of possible demand elasticity values *"from it being significantly inelastic (-0.2 [f]or example) ... up to the level of elasticity predicted by the Dobbs 3 model"*.[269]

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[262] Dobbs report, paragraph 28.
[263] Professor Dobbs also notes specific complications associated with the period September to October 2011 when the retail prices were important for determining the amount of money to be paid to BT (Dobbs report, paragraph 30).
[264] Dobbs report, paragraph 28-31.
265 This is consistent with the view we expressed in the 0845/0870 Dispute (see paragraph 4.134-4.136 of the 0845/70 Determination).
[266] [✂] (see paragraph 4.134 of the 0845/70 Determination).
[267] [✂].
[268] Dobbs report, page 2.
[269] Dobbs report, paragraph 41.

7.51 Professor Dobbs points to spillover effects (which we discuss at paragraph 3.39 of the Provisional Conclusions) as an explanation for why demand can be inelastic at current retail prices and argues that the presence of a significant spillover effect should not be ruled out.[270] He therefore considers that it is valid to consider the predictions of the Dobbs 4 model (with inelastic retail demand) alongside the predictions of the Dobbs 3 model. His analysis, using the Dobbs 4 model, shows that allowing for demand inelasticity in this way tends to increase significantly the incentive for MNOs to reduce retail price. While acknowledging that the Dobbs 4 model may tend to exaggerate the extent of price reduction, he argues that the direction is robust. In addition, he argues that where the Dobbs 4 model predicts significant price reductions, although there may be some exaggeration, the extent of the price reduction is *"necessarily not small"*.[271]

7.52 Professor Dobbs also comments on one aspect of our consideration of the empirical evidence submitted by EE to support its view that demand is inelastic. In response to our point that the empirical evidence referred to by EE appears to relate to an industry elasticity of demand, he argues that the distinction between industry and firm demand is not likely to be important in the present case because retail demands for 08x calls are best thought of as 'aftermarket' or 'captive' demands.[272]

7.53 EE argues that the assumption of elastic demand in the modified Dobbs model contradicts the available empirical evidence, which suggests that demand for calls to the number ranges in the disputes is inelastic. EE argues that none of the reasons given in paragraph 4.53 of the Provisional Conclusions are good reasons to conclude that the evidence it provided does not provide a basis for concluding that the demand for calls to the affected number ranges is inelastic. Therefore, EE submits that *"Ofcom should proceed on the basis that, even if it cannot be regarded as proven or probable that retail demand for NGCs is inelastic at current prices, on any view there is a significant likelihood that demand is inelastic".*[273]

7.54 Specifically:

- In relation to our observation that the empirical evidence referred to by EE relates to an industry elasticity of demand for all outgoing call services, EE argues that only the references to the NERA analysis and the NGCS review April 2012 consultation related to industry-wide data. The rest of the price elasticity evidence related to the Orange brand.[274]

- EE argues that we were incorrect in saying that EE was unable to control for other factors potentially affecting demand for NTS calls, as some of the evidence related both to number ranges where there were price changes and to number ranges where there were no price changes. EE also submits that it is unreasonable for us to refer to "other factors" without providing some indication as to what these factors are and why they matter. EE notes that its evidence implies very low elasticities even after taking account of

[270] In paragraphs 42 and 44 of his report, Professor Dobbs refers to this as the 'mobile tariff package effect'. We presume this is a typographical error, and that he means 'spillover effect'.
[271] Dobbs report, paragraph 63.
[272] Dobbs report, paragraph 40.
[273] EE's response to our Provisional Conclusions, paragraph 37.
[274] EE's response to our Provisional Conclusions, paragraph 32.1.

the assumption of year-on-year decline in NTS calls we made in our NGCS review April 2012 consultation.[275]

- In response to our concern that EE was unable to split out volumes for those users experiencing price increases from those that did not, EE has provided further evidence based on selected individual tariff plans. EE argues that this more granular approach increases the robustness of the results as consumers within a tariff plan typically face the same prices. EE finds that the highest price elasticity is still [✂], even allowing for Ofcom's assumed annual decline in NTS call volumes.[276]

7.55 In relation to our use of the Lerner condition in the modified Dobbs model to calibrate the demand curves at the initial average retail price, EE argues that this is inappropriate in principle where the firm sets multiple prices for inter-related products.[277]

7.56 EE also argues that the Lerner index only implies elastic demand at current prices if MNOs are assumed to maximise profits on each NGC number range. EE submits that, in fact, there is good reason to believe that MNOs set prices for calls to the affected number ranges taking into account their overall relationship with their customers and reputational effects. In support of this argument, EE cites two examples of negative publicity surrounding non-geographic call prices: coverage surrounding the prices charged for the 0844 wheelchair booking line for the Paralympics and coverage relating to Vodafone's recent price increases.[278]

7.57 EE suggests that a fear of increased regulation is another possible reason for why the MNOs price on the inelastic portion of the demand curve. EE argues that this concern cannot be considered unreasonable given Ofcom is currently reviewing these number ranges and has proposed significant regulatory intervention.[279]

7.58 O2 also considers that it is likely to be the case that responses to price changes might be relatively weak, given consumers' lack of price awareness. It believes that BT's incentive in introducing wholesale tiered charges indicates that demand for calls to the relevant number ranges is unresponsive to changes in retail prices.[280]

7.59 [✂].[281]

Our views

7.60 As noted above, EE and BT both consider that the demand for calls to the affected number ranges may be inelastic and suggest that we should allow for this possibility in our analysis.

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[275] EE's response to our Provisional Conclusions, paragraph 32.2.
[276] EE's response to our Provisional Conclusions, paragraph 32.3
[277] EE's response to our Provisional Conclusions, paragraph 33.1
[278] EE's response to our Provisional Conclusions, paragraph 33.2
[279] EE's response to our Provisional Conclusions, footnote 19.
[280] As noted in paragraph 7.42 above, O2 argues that it is reasonable to suppose that BT has sought to introduce wholesale tiered charging schemes on the basis that they would increase revenues through higher wholesale charges.
[281] [✂].

7.61 Below, we first set out our views on EE's comments on our analysis of their evidence on the elasticity of demand. We then set out our views in relation to respondents' comments on how inelastic demand can be reconciled with MNO profit maximising behaviour. Following this, we explain how we have extended our analysis to explore the potential impact of inelastic demand for calls to the affected number ranges.

EE's empirical evidence

7.62 In this section we set out our views in relation to EE's comments on our analysis of their evidence on the elasticity of demand for calls to the affected numbers.

7.63 First, our observation that the empirical evidence referred to by EE relates to an industry elasticity of demand for all outgoing call services related specifically to EE's reference to the NERA study (see paragraph 4.41 of the Provisional Conclusions).[282] We accept that the distinction between industry-level and firm-level demands when estimating the elasticity faced by EE for calls to the affected number ranges is less important given that prices of non-geographic calls currently play little role in consumers' choice of mobile network provider. However, the NERA study relates to the elasticity of demand for all outgoing call services, not just NTS calls, so the distinction between industry-level and firm-level elasticity is likely to be more important.

7.64 Second, we note the limitations to EE's own analysis which we identified in paragraph 4.53 of the Provisional Conclusions were recognised by EE in its response to our information request in which it submitted the analysis. EE stated that there were clearly *"other factors"* at play, and referred to its analysis as indicative, rather than providing formal elasticity estimates.[283] Therefore, whilst the evidence may be supportive of inelastic demand, EE appears to have accepted that it does not provide a robust basis to conclude that demand for calls to the affected number ranges is inelastic. In addition, although some of EE's evidence related both to number ranges where there were price changes and to number ranges where there were no price changes, we do not consider this to be a sufficiently robust way of controlling for other factors. For example, because different number ranges may face different demand shocks, and so the volume change in number ranges not facing a price change may not adequately control for any demand shocks in the number ranges facing price changes. Again, EE appears to have recognised this in its response to our information request, stating that *"no formal econometric work has been possible in the time available."*[284]

7.65 Third, in relation to the additional evidence submitted by EE (referred to in paragraph 7.54), we agree that looking at prices and volumes for individual tariff plans is clearly preferable to looking at data across all tariffs. However, even assuming that the new approach no longer contains volumes both for users who did and did not experience price reductions, the analysis still does not control for other factors potentially affecting demand for calls to the affected number ranges. Moreover, EE's analysis is based on data from five tariffs, and the results of EE's analysis suggest that the implied price elasticity could vary significantly by tariff (which we note in itself is not consistent with common demand shocks). EE does not explain how or why it has

[282] Our paragraph reference to paragraphs 4.41-4.43 in paragraph 4.53 (first bullet) was incorrect and should of been 4.41. We have now corrected this in the Final Determination.
[283] EE response to Question 5 of the first s191 Notice NCCNs 1101 and 1107 Dispute.
[284] EE response to Question 5 of the first s191 Notice NCCNs 1101 and 1107 Dispute.

selected these particular tariffs, nor does it provide any evidence on how representative these tariffs are of its total customer base.

7.66 In light of this, we remain of the view that the available evidence does not allow us to reliably assess the precise impact of a change in the retail price for calls to the affected numbers on the volume of these calls.

7.67 However, we consider that there are some features of the NTS market, notably low price transparency and a resulting lack of consumer price awareness, which may limit the impact of a reduction in retail call prices on the demand for calls to the affected numbers by mobile customers (see paragraph 3.40 above), and we agree with BT and EE that this suggests that demand may be relatively inelastic. This is consistent with our position in the NGCS review, where we recognise that demand for NGCs may be relatively inelastic because of the nature of some services provided over non-geographic numbers for which there may be limited alternatives.[285]

Reconciliation of inelastic demand with MNO profit maximisation

7.68 In this section we set out our views in relation to respondents' comments on how inelastic demand at prevailing prices could be reconciled with MNO profit maximising behaviour.

7.69 As explained in paragraph 4.55 of the Provisional Conclusions, we recognise that the simple economic models of pricing behaviour (such as the Dobbs 3 model) imply that MNO retail demand for calls to the affected numbers is elastic at prevailing prices, and that to reconcile inelastic demand with MNO profit maximisation it is necessary to explain why it is not profitable for MNOs to raise these call prices further. We explained in paragraphs 4.56-4.60 of the Provisional Conclusions that we were not persuaded that the evidence advanced by EE was sufficient to support their proposed reconciliation of inelastic demand with MNO profit maximisation.[286]

7.70 As noted above, EE maintains that an increase in NTS call prices could reduce MNO subscription demand if this has an adverse effect on an MNO's reputation amongst subscribers (see paragraph 7.56). We set out our views on EE's evidence for reputation effects in paragraphs 4.56-4.59 of the Provisional Conclusions and note that EE does not respond specifically to the concerns we had about this evidence.

7.71 We consider that the further evidence of reputation effects provided by EE (see paragraph 7.56) does not offer any reliable additional insight to the possible impact of increasing the price of calls to the affected number ranges on its reputation and net additions. In particular:

- the article on prices charged for the 0844 wheelchair booking line for the Paralympics cited by EE is not, in our view, an example of negative

[285] In our Impact Assessment for the unbundled tariff in the NGCS review, we assumed an average elasticity of -0.3 for all NTS calls. In doing so, we noted that the thresholds calculated in the Impact Assessment were not intended to be precise but to help indicate the order of magnitude. We considered a value of -0.3 appropriate for this purpose, noting that this was consistent with the evidence we had seen on the extent of suppressed demand, stakeholder comments that demand was inelastic and the approach we had previously taken in the 2005 NTS consultation and 0870 Determination (see paragraph A16.72 – A16.77 of the NGCS review April 2012 consultation).

[286] We also noted in paragraph 3.39 of the Provisional Conclusions that we had concluded that spillover and cross-price effects were unlikely to be strong in the 0845/0870 Determination.

publicity accruing to an MNO. The "negative coverage" in the article on prices charged for the 0844 booking line for the Paralympics is focussed almost entirely on the Paralympic Games organisers and their alleged discrimination against wheelchair users; and

- whilst the article on Vodafone's recent price increase mentions the increase in prices of some NGCs, it relates primarily to the impact on reputation from an increase in the monthly tariff for customers on fixed contracts, which are very visible to subscribers.

7.72 EE also suggests that "fear of increased Ofcom regulation" may be an alternative explanation for why MNOs do not increase current retail prices if demand is inelastic. Whilst we accept that this may be possible in theory, EE does not provide any evidence of this being a significant consideration in practice. Nor does EE explain how an increase in the retail prices for calls to the affected number ranges might result in increased regulation, given the nature of our proposals in the NGCS review (see paragraphs 2.29-2.32). For these reasons, we are not convinced that this is a significant consideration in practice.

7.73 Professor Dobbs also suggests that demand is likely to be inelastic, and argues that we should not rule out the presence of a significant spillover effect. We note that Professor Dobbs argued in the 0845/0870 Dispute "*in my view it is highly likely that spillover effects are not strong*."[287] We also note that Ofcom found in the 0845/0870 Determination that there was no convincing evidence that NTS call prices have a significant spillover effect on the demand for other mobile services.[288] Neither Professor Dobbs, nor BT, have provided any empirical evidence in their response to the Provisional Conclusions to support the contention that spillover effects are significant. Moreover, Professor Dobbs does not comment on our observation that the evidence we have seen from consumer surveys conducted to inform our NGCS review April 2012 consultation suggests that spillover effects are unlikely to be significant, as set out in paragraph 3.39 of our Provisional Conclusions. We therefore remain of the view that the available evidence does not support the existence of a strong spillover effect.

Analysis of potential impact of inelastic demand

7.74 Professor Dobbs suggests that we should rely on the Dobbs 4 model in order to analyse the Direct effect in inelastic demand scenarios. This model was developed by BT during the course of the 0845/0870 Disputes and considered by Ofcom at that time. Ofcom expressed a number of concerns regarding the reliance that could be placed on the Dobbs 4 model, and in particular found that the Dobbs 4 model assumes the existence of a significant spillover effect for which there is no convincing empirical evidence.[289] In addition, Ofcom considered that the assumption that the spillover function is linear in the Dobbs 4 model is unlikely to be valid over a wide range of prices.[290] We note that Professor Dobbs appears to accept that a linear spillover function may tend to exaggerate the incentive to reduce prices, and has suggested that this could be addressed by using a non-linear spillover function that

[287] The expert report by Professor Dobbs (Dobbs 6) which accompanied BT's appeal in relation to the 08x cases, paragraphs 25-26 and 31.
[288] 0845/0870 Final Determination, paragraph 8.45.
[289] 0845/0870 Final Determination, paragraph 8.45 and 8.68.
[290] 0845/0870 Final Determination, paragraph 8.90.

allows for the fact that the (marginal) spillover may be lower at retail prices below the prevailing level.[291]

7.75 In view of the lack of empirical support for a significant spillover effect we do not consider that it is appropriate for us to rely on the Dobbs 4 model to the extent that it assumes a significant spillover effect across the relevant ranges of retail prices (e.g. through a linear spillover function assumption). In this regard, we note that the incentive to reduce the retail price to the affected number ranges in the Dobbs 4 model reflects the balance of two considerations:

- First, when retail call demand is more inelastic the impact of a given retail price reduction on the volume of calls to the affected number ranges is less significant. On its own, this means that the incentive to reduce retail call prices to the affected number ranges is weaker when demand is more inelastic (i.e. less responsive to a price reduction).

- Second, in the Dobbs 4 model, as retail call demand is more inelastic, the (marginal) profit spillover at prevailing prices is necessarily larger. On its own, this strengthens the incentive to reduce retail call prices to the affected number ranges due to the positive impact on the profits earned on other mobile services that result from the assumed positive spillover effect.

7.76 The interaction of these two considerations will depend on the extent to which spillover effects are assumed to be significant across the relevant range of retail prices. In particular, if spillover effects are assumed to be significant across the relevant range of retail prices (for example through the use of a linear spillover function as assumed in the Dobbs report, then the Dobbs 4 model will tend to show an increased incentive to reduce retail call prices (relative to the Dobbs 3 model, and relative to the Dobbs 4 model in which spillover effects are not significant across the relevant range of retail prices), and this tendency will be greater as retail call demand is less elastic.

7.77 Given the absence of evidence to suggest that there is a significant positive spillover effect, we are concerned that reliance on the Dobbs 4 model may provide an unreliable guide to the strength of the Direct effect, and that specifically this may give an exaggerated view of the potential direct effect (as explained above). Equally, we are not persuaded that EE's proposed explanations provide a satisfactory explanation of how inelastic demand at current retail prices can be reconciled with profit maximisation.

7.78 As we noted in the Provisional Conclusions, we recognise that the Dobbs 3 model may also overstate the incentive to reduce retail call prices if the impact of a reduction in retail call price on call volumes is more limited than implied by the assumptions used in Dobbs 3 analysis (see paragraph A3.26). This was one of the reasons we were cautious in relying on the precise predictions of the model.

7.79 Given stakeholder responses, we have extended our analysis of the modified Dobbs 3 model to include the assumption that retail demand is inelastic at prevailing prices. This analysis supplements the scenarios we considered in the Provisional Conclusions, which formally considered scenarios in which demand is elastic at

[291] Dobbs Report, Annex 2, paragraph 2.

prevailing prices (through the use of the Lerner condition) for modelling purposes, subject to the important caveat that the demand response may be weaker than assumed in our analysis (see paragraph A3.26 of the Provisional Conclusions).[292] Specifically, we have analysed the Direct effect under the assumption that retail call demand is linear, and that the elasticity of demand at the initial price and quantity is between 0.4 and 0.2 (in absolute terms).[293] Furthermore, we assume for the purpose of this exercise that MNOs do not wish to increase retail call prices further in these scenarios, but may choose to reduce retail call prices.[294] We explain this analysis in more detail, and note some important caveats to this analysis in Annex 5.

7.80 Our additional analysis makes use of the modified Dobbs 3 framework and does not therefore include a spillover effect. We recognise that there is a basic tension in the assumption of inelastic demand at prevailing prices in the Dobbs 3 model, since it would appear that MNOs have an incentive to raise retail call prices further if demand is inelastic. However, we consider that this is a pragmatic approach to assess the potential implications of inelastic call demand at current retail prices (and more generally to assess how the Direct effect changes if the demand response to a reduction in call prices is more limited than that implied by the modified Dobbs 3 model), given the absence of a well-evidenced mechanism to reconcile inelastic demand with MNO profit maximisation, and the absence of evidence that there is a significant spillover effect. To the extent that demand is inelastic at prevailing prices, we recognise that this model may not accurately reflect the true mechanism for reconciling inelastic demand with MNO profit maximisation. However, we consider that the results help inform our assessment of what might happen if demand is inelastic.

The shape of the demand curve

Views of the parties

7.81 EE states that the modified Dobbs model is very sensitive to the assumptions made about the shape of the demand curve. EE acknowledges that in the absence of empirical analysis, it is not possible to be categorical about which of linear and constant elasticity demand is closest to the correct answer. However, EE argues that we should place more weight on the results of our analysis assuming linear demand (as an assumption of constant elasticity is likely to over-estimate the profitability of

[292] In relation to EE's argument that the Lerner condition is inappropriate where the firm sets multiple prices for inter-related products (see paragraph 7.55), we explained in paragraph A3.23 of the Provisional Conclusions that the Lerner condition applies in the modified Dobbs model provided that the price of calls to the affected number range does not affect the demand for other products sold by the firm. We noted in paragraph 3.39 of the Provisional Conclusions that we had not seen evidence to suggest that a change in the retail price of calls to the affected numbers is likely to lead to any material change in demand for other mobile services.

[293] This range reflects the elasticity values for inelastic demand proposed by Professor Dobbs and EE. We note that it is also consistent with the range used in our Impact Assessment for the NGCS review April 2012 consultation (see footnote 283).

[294] Assuming retail demand is inelastic at prevailing prices suggests that an incentive exists to increase retail call prices further even before the introduction of the NCCNs. Given the tension between this incentive and what we actually observe (i.e. MNOs have not increased prices further), if the profit maximising retail call price in the inelastic demand scenarios we have considered is above the prevailing retail call price, we assume that MNOs leave prices unchanged. We recognise there may be lower retail call prices at which MNOs' profits are higher following the introduction of the disputed NCCNs; however, taking this into account does not affect our conclusions.

price reductions, and therefore predict lower prices under ladder pricing than will result in practice). In support of its argument, EE makes the following observations:[295]

- Economists generally assume price elasticity increases as prices rise, which is true of linear demand but not for constant elasticity demand (by definition).

- A constant elasticity assumption can at best be only a reasonable local assumption and cannot be a good description along the whole demand curve (as it implies positive demand even as the price reaches infinite levels and infinite demand as the price approaches zero). EE argues that this is highly relevant in this case where the price reductions predicted under constant elasticity demand are substantial (for example, NCCN 1046).

- For any given price reduction, a constant elasticity demand curve will predict a greater demand response than the linear demand curve, meaning any given price reduction will be more profitable (or less unprofitable) under constant elasticity than under linear demand.[296]

7.82 BT did not comment specifically on the shape of the demand curve. In his report, Professor Dobbs considers models using linear demand and constant elasticity demand in his analysis of the Direct effect.

Our views

7.83 In paragraphs A3.25-A3.27 (and paragraphs 4.68, 5.43, 6.33) of our Provisional Conclusions, we noted that we had not seen empirical evidence that would allow us to conclude that either linear demand or constant elasticity demand is a good approximation to the actual demand for calls over the relevant price ranges, or to prefer one form of demand over the other. As none of the parties have provided empirical evidence on the actual demand for calls to the number ranges affected by the NCCNs in their responses, it remains the case that we are not in a position to prefer one form of demand over the other.

7.84 We recognised in paragraph A3.24 of our Provisional Conclusions that the incentive to reduce retail call prices under BT's NCCNs is generally significantly stronger under constant elasticity demand than under linear demand. Indeed, this characteristic was the very reason for considering constant elasticity demand in addition to linear demand. Given the uncertainty about the true nature of demand, considering constant elasticity demand allowed us to explore whether the predicted Direct effect was sensitive to the shape of the demand curve and its implied volume response (see paragraph 3.41 of the Provisional Conclusions). For example, the results of the two demand scenarios led us to provisionally conclude that the direction of the Direct effect in relation to NCCN 1101 is uncertain (see paragraphs 4.70-4.73 of the Provisional Conclusions).

7.85 We appreciate that generally, constant elasticity demand is unlikely to be a good description along the *entirety* of the demand curve, and in particular that there is a

[295] EE's response to our Provisional Conclusions, paragraphs 22-26.
[296] EE's response to our Provisional Conclusions, paragraphs 22-26.

risk that it may result in a potentially significant overestimate of the demand response to a large price reduction. We therefore accept that we should be cautious in placing undue reliance on the constant elasticity demand scenario.

7.86 Finally, as explained in paragraphs 7.79 above, in light of responses to our Provisional Conclusions, we have extended our theoretical analysis to consider scenarios where demand is less responsive to a reduction in price. Although we have assumed a linear demand form in these scenarios, this should not be interpreted as a preference for linear demand over constant elasticity demand. Rather, it simply reflects the purpose of these scenarios, which is to explore how the Direct effect varies if demand is not as responsive to a reduction in price as that assumed in the Provisional Conclusions (i.e. an assumption of linear demand will imply a smaller increase in demand in response to a given price reduction than an assumption of constant elasticity demand).

Weighted average tariffs

Views of the parties

7.87 Professor Dobbs considers it reasonable for Ofcom to calculate weighted average wholesale tariff schedules in our assessment of the Direct effect. He notes that in doing so, we implicitly assume that cross-price effects are small and/or self-cancelling, giving the example of time of day retail tariffs; namely, if an NCCN creates an incentive for the MNO to change a time of day retail price, this in turn will affect volumes at other times of the day. However, in his opinion, it is likely that the overall impact is small because time of day retail pricing is not widespread, and in any case, the NCCNs are implemented simultaneously for services and by time of day.[297]

7.88 Professor Dobbs considers that it is reasonable to study retail price incentives under individual NCCNs as if they are standalone, on the basis that the substitution effects can be ignored because the NCCNs are similar in structure and are applied simultaneously.[298]

Our views

7.89 We explained in paragraph A3.12 of our Provisional Conclusions that EE sets a number of retail prices, each of which covers one or more BT charge bands and all times of day. In order to model the Direct effect in a manner consistent with EE's retail pricing policy, we constructed a weighted average wholesale tariff schedule for each initial retail price point set by T-Mobile and Orange in the affected number ranges, and assessed the likely direction of movement in each pricing point using the Dobbs framework.[299]

7.90 Therefore, we implicitly assume that EE maintains its existing pricing policy and does not respond to an NCCN by introducing more granular pricing (for example, time of day pricing). This assumption is consistent with our understanding that EE's pricing policy reflects consumer preferences for tariff simplicity and the costs to EE

[297] Dobbs report, paragraphs 34-36.
[298] Dobbs report, paragraph 37.
[299] Professor Dobbs' is therefore incorrect to state (Dobbs report, see paragraphs 34-37) that we computed weighted average tariffs *"in order to cope with the proliferation of closely related tariffs (by time of day and number range)."*

associated with more granular pricing[300] (see paragraph A3.11 below). To the extent that the NCCNs create an incentive for EE to depart from its existing pricing policy, our analysis does not explicitly capture this.

7.91 We recognise that our modelling of the Direct effect is also based on the average of the different retail prices that apply at a particular price point across the MNO's different tariffs.[301] Of course, MNOs can respond to the NCCN by changing these retail prices in different ways. The model implicitly assumes that they respond such that the average of these retail prices is profit maximising. In doing so, we make an assumption about the overall demand for all calls covered by the price point. Any cross-price effects are assumed to be captured in the average, or are small and/or self-cancelling.

Marginal cost of origination

Views of the parties

7.92 Professor Dobbs considers that it is *"highly likely that marginal costs are less than 0.7ppm"*. He notes that Ofcom's own estimate of the LRIC of mobile call termination appears to be less than 0.8ppm, referring to Table 3.1 and paragraphs 4.126 of our Provisional Conclusions.[302] Professor Dobbs also states that *"BT insiders"* consider that the relevant marginal cost figure could be as low as 0.25ppm. He uses 0.5ppm as a central estimate in reporting the results of his analysis. However, he notes that the results using 0.8ppm are *"substantially the same"*.[303]

Our views

7.93 We explained in paragraphs A3.28-A3.30 of our Provisional Conclusions that our 0.8ppm estimate of the marginal cost of originating a call to an 080, 0843/4, 0871/2/3 or 09 number was based on our estimate of the LRIC of originating an 080 mobile call, which we estimated for the purposes of our Impact Assessment in our NGCS review April 2012 consultation. We continue to consider that this estimate is the best evidence currently available to us for the purpose of resolving these Disputes.[304]

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[300] We note that in our NGCS review we nonetheless consider the current range of tariffs to be very complex to the detriment of consumers, and are addressing this through that review.

[301] In this connection, we note that EE states that "average retail prices are relevant to Principle 2, in particular as regards the modelling of the Direct Effect ... because the NCCNs operate on average prices and any incentive effects therefore depend upon the average price." EE's response to the Provisional Conclusions, paragraph 13.

[302] Professor Dobbs refers to paragraph 4.126 of the Provisional Conclusions where a range of 0.6-0.7ppm is given. For the avoidance of doubt, this range refers to the *differential* in LRIC between fixed and mobile origination of NTS calls. In the NGCS review April 2012 consultation, we assumed the incremental cost for fixed 080 call origination to be 0.1ppm. The difference between this figure and our estimate of the pure LRIC for mobile 080 call origination (0.7-0.8ppm, as referred to in Table 3.1), gives the range 0.6-0.7ppm.

[303] Dobbs report, paragraph 48.

[304] As noted in paragraph 7.23, in light of comments received in response to the NGCS review April 2012 consultation, we now believe that 0.8-0.9ppm provides a reasonable estimate of the marginal cost of originating a call. Given the estimate of 0.8ppm that we have used in our analysis falls within this new range, we have not considered it necessary to revise our analysis. We do not believe that using a call origination cost at the upper end of this range would alter our findings.

Dilution effects

Views of the parties

7.94 Professor Dobbs argues that assessing the benefits from the NCCNs in dispute involves assessing the likely response of other TCPs. Consistent with paragraphs A3.16-A3.17 of the Provisional Conclusions, he submits that:[305]

- The imposition of tiered pricing by one TCP (when other TCPs do not follow) does not alter the direction of the Direct effect, but may in practice reduce the extent of the retail price reduction if MNOs are unable to differentiate prices by TCP.[306] If MNOs can differentiate their prices by TCP, Professor Dobbs considers that the models are formally correct in terms of their analysis of incentives to reduce these prices.

- To the extent that other TCPs implement similar tiered wholesale charges, the incentives and magnitude of adjustment are restored to the "no dilution" predictions.

7.95 Professor Dobbs considers that ladder pricing can be expected to proliferate across TCPs; the fact that SPs can switch TCP introduces competitive pressures which mean that where one TCP implements ladder pricing, others will follow suit. He argues that SPs have an incentive to switch to the TCP introducing tiered charges in order to take advantage of greater revenue pass through as a result of higher TCP revenues and/or higher traffic as a result of lower MNO retail prices. Professor Dobbs states that this is precisely what happened in the case of the 080/0845/0870 number ranges.[307]

7.96 EE argues that our assumption that all TCPs will introduce tiered termination charges in line with those introduced by BT limits the conclusions that can be drawn from the modelling. EE acknowledges that we recognised these limitations in the Technical Annex (specifically, paragraphs A3.16-A3.17 of the Provisional Conclusions), but submits that it is not clear whether we took them fully into account in reaching our Provisional Conclusions. EE argues that these limitations substantially reinforce our specific provisional conclusions in respect of each NCCN.[308]

Our views

7.97 We agree with Professor Dobbs that replication of BT's tiered termination schedules by other TCPs will strengthen the Direct effect. In our Provisional Conclusions, we explained that as MNOs do not set different retail prices for calls to NTS numbers depending on the identity of the terminating operator, the impact of BT's NCCNs on MNOs' retail pricing incentives will depend on the wholesale termination schedules levied by other TCPs as well as by BT (see paragraph A3.13 of the Provisional Conclusions). We recognised that if some TCPs do not introduce tiered termination

[305] Dobbs report, paragraph 59.
[306] Professor Dobbs also notes that it may increase the chance of there being no retail price response, as *"the profit cost of not responding to the price reduction incentive is smaller"* (Dobbs report, paragraph 52).
[307] Dobbs report, paragraphs 53-56.
[308] EE's response to our Provisional Conclusions, paragraphs 17-21.

charges, then this would dilute the impact of BT's NCCNs on MNOs' retail pricing incentives (see paragraph A3.16 of the Provisional Conclusions).[309]

7.98 However, as set out in paragraph A3.14 of our Provisional Conclusions, we understand that some TCPs have already introduced tiered termination charges on all of the affected number ranges except the 09 range, and that these are similar to BT's wholesale termination schedules for the relevant number range. In addition, the considerable revenues which TCPs stand to gain from introducing identical tiered termination schedules alongside the ease with which some TCPs have been able to mimic BT's charges meant that we considered it likely that other TCPs would implement very similar, if not identical, schedules of charges if we were to find any of the NCCNs in dispute fair and reasonable. For these reasons, we have not included a dilution effect in our theoretical assessment of the Direct effect, but have assumed that all other TCPs have or will implement termination charges that are identical (or very similar to) to BT's (see paragraph A3.15 of the Provisional Conclusions).

7.99 In response to EE's comment that it is not clear whether we took the possibility of dilution effects fully into account in reaching our Provisional Conclusions, we explained in paragraph A3.17 that it is not practicable for us to take into account dilution effects in our analysis using the modified Dobbs model as its involves significant additional complexity. Specifically, the effect of BT's tiered termination charges on MNOs' pricing decisions is more complicated if other TCPs respond by changing their termination charges in some other way dissimilar to BT's charges. In this connection, we note O2's argument that TCPs may seek to increase revenues by amending wholesale tiered termination charges frequently, taking advantage of the time taken by MNOs in changing retail prices (see paragraph 7.103).

7.100 Therefore, the possibility that other TCPs introduce tiered tariffs which differ from BT's (and each other's) represents a further source of uncertainty regarding the robustness of our theoretical assessment with regard to the direction and magnitude of the Direct effect.

Sources of uncertainty in the Direct effect

Views of the parties

7.101 DotEcon suggests that the "full price reduction" and "no price reduction" scenarios defined in the Provisional Conclusions appear to relate to whether or not OCPs respond to pricing incentives. It argues that it is not relevant to consider the risk that OCPs might not respond rationally to an incentive for a price reduction that would result in a net benefit (for example due to failure to understand the incentive, or gaming behaviour). DotEcon argues that the relevant questions are only what incentives exist for OCPs to cut price, and whether the resulting price reduction would be net beneficial.[310]

7.102 Professor Dobbs suggests that uncertainty over whether retail price reductions will occur can be incorporated as a form of sensitivity analysis on his welfare

[309] We also noted that the effect of BT's tiered termination charges on MNO's pricing decisions is more complicated if other TCPs respond by changing their termination charges in some other way dissimilar to BT (see paragraph A3.17 of the Provisional Conclusions).
[310] DotEcon report, paragraphs 111-115.

assessment. He suggests considering two states of the world: one in which the MNO reduces price to the level predicted by a particular model and the other in which the MNO ignores these price incentives and leaves price unchanged. Professor Dobbs then calculates the critical probability with which MNOs respond to the price incentives predicted by a particular model, above which the NCCN is supposedly net beneficial.[311]

7.103 O2 argues that our assessment should take into account the fact that MNOs may not respond to the incentive to amend retail prices in response to wholesale tiered charges in the way the modified Dobbs model suggests. Specifically, O2 argues that there is a degree of inertia on the part of the MNOs when deciding how to respond to wholesale tiered charging schemes, due to the considerable time and effort required to calculate optimal retail prices, and amend and test billing systems. O2 notes that by the time the retail price has been amended, the wholesale tiered charging schemes may well have changed. O2 also argues that the possibility of gaming by TCPs to increase revenues by amending wholesale tiered termination charges frequently represents another incentive on MNOs not to amend retail prices.[312]

Our views

7.104 The "full price reduction" and "no price reduction" scenarios defined in paragraph 3.100 and 3.101 of the Provisional Conclusions refer only to the incentives to reduce price. Contrary to DotEcon's understanding, the source of uncertainty we identified was not whether MNOs will act on an incentive to reduce price, but rather, what that incentive is. We assume that MNOs respond rationally to any incentive to change prices that would maximise profits.

7.105 We have used stylised models to assess the possible direction and magnitude of the incentive on MNOs to change call prices, but recognise that they may not accurately reflect the basis on which MNOs make their pricing decisions in practice (see paragraph 3.41). Specifically, the models may not capture all of the factors that affect MNOs' pricing decisions (for example, O2 argues that there is a degree of inertia on the part of the MNOs when considering how to respond to a particular WTS – see paragraph 7.103). Therefore, the models may not give an accurate view of the MNOs' optimal responses to the NCCNs in dispute. Given this uncertainty, we do not rely on the precise predictions generated by the model (i.e. the magnitude of the Direct effect).

7.106 We also recognise that there is uncertainty regarding the nature of retail demand for calls to the affected number ranges, namely, its shape and elasticity. We have looked at a number of scenarios to explore the implications of a range of plausible values for these key parameters for the Direct effect. However, in the absence of empirical evidence on the nature of demand, we are uncertain about the likelihood of alternative scenarios.

7.107 Moreover, there are further sources of uncertainty affecting the Direct effect which are not reflected quantitatively in the stylised model. For example, as discussed in paragraph 7.100, there is uncertainty around whether other TCPs will introduce tiered termination charges which differ to BT's, and what this means for the Direct effect.

[311] Dobbs report, paragraphs 121-123.
[312] O2's reponse to our Provisional Conclusions, page 4.

These sources of uncertainty are reflected qualitatively in our assessment of the Direct effect.

Treatment of VAT

Views of the parties

7.108 Professor Dobbs considers that our refinement of the Dobbs 3 model to define the MNO call margin in terms of the retail price excluding VAT (see paragraph A3.31 of the Provisional Conclusions) is "*a useful extension*". He also suggests "*it can be shown that accounting for VAT roughly has the effect of increasing effective retailer marginal costs, so its impact can be taken into account via sensitivity analysis on marginal cost*".[313]

Our views

7.109 We disagree with Professor Dobbs' suggestion that accounting for VAT roughly has the effect of increasing effective retailer marginal costs. Increasing marginal costs acts to reduce MNO retention by an absolute amount whereas taking into account VAT has the effect of reducing MNO retention by an amount proportional to the retail price charged. As a result, the inclusion of VAT reduces the steepness of the retention schedule, and so has an effect on MNOs' incentives to change price that is not captured by simply increasing the marginal cost of origination.

7.110 For example, in the case of NCCN 1046, once the retail price reaches 22.5ppm (including VAT), the termination charge increases by more than the increase in the retail price excluding VAT, meaning that the retention per minute available to the MNO declines with each further step (see paragraph 6.7). Therefore, the retention per minute is maximised when the retail price is (just below) 22.5ppm (including VAT). It is only by taking explicit account of VAT that this characteristic can be reflected in the Dobbs model. By simply increasing marginal costs (and so reducing retention per minute by an absolute amount), retention per minute will still increase at retail prices above 22.5ppm. This could result in a price prediction which is clearly erroneous (i.e. above 22.5ppm).

Results of the theoretical assessment

Views of the parties

7.111 Professor Dobbs undertakes an analysis of selected individual tariff schedules that have significant volumes of traffic.[314] Although he is unable to reproduce the detailed analysis in our Provisional Conclusions, he confirms that our modelling is correct. In addition to analysing the Direct effect using the Dobbs 3 model (which we based our analysis on in the Provisional Conclusions), Professor Dobbs also uses the Dobbs 4 model with inelastic demand and an assumed linear spillover function (see paragraph 7.51). He considers both linear and constant elasticity demand specifications, and assumes a demand elasticity of -0.4 when using the Dobbs 4 model assuming a spillover effect. He finds that if demand is significantly inelastic, the incentives to

[313] Dobbs report, paragraph 33.
[314] Professor Dobbs is unable to analyse weighted average schedules as the weights depend on confidential MNO data.

reduce price are even more emphatic compared to the results of the Dobbs 3 model.[315] Professor Dobbs finds that this is particularly the case in relation to the schedules that he analyses from NCCN 1101 (0844 g6 and 0871 g7). In the case of NCCN 1046, he finds that MNOs are incentivised to reduce prices significantly whatever the demand elasticity (whether with zero spillover, or with demand appreciably more inelastic). In relation to the schedules Professor Dobbs analyses from NCCN 1107 (ff13 and ff21), he finds that all models predict retail price reductions.[316]

7.112 H3G agrees with Ofcom's findings regarding the uncertainty in assessing the magnitude of the Direct effect, but remains of the view that the ladder charges are more likely to have a negative Direct effect by incentivising increases in retail price, both within each rung and overall. In addition, H3G argues that the modelling of the Direct effect should be approached cautiously given its clear limitations.[317]

Our views

7.113 As explained in paragraphs 7.79, in light of the responses to our Provisional Conclusions, we have considered additional scenarios in which the demand response is weaker than that implied by the modified Dobbs model. For the purpose of this additional analysis, we have assumed a linear demand form with point elasticity of demand at the initial price and quantity between 0.4 and 0.2 (in absolute terms). We note, however, that we have not seen empirical evidence that would allow us to conclude that any one of these assumed demand curves is a good approximation to the actual demand for calls over the relevant price range.

7.114 As we stated in paragraph 3.41 of the Provisional Conclusions, the modified Dobbs model is a stylised representation of reality and may not accurately reflect the basis on which MNOs make their pricing decisions in practice. We explained that, in our view, the Dobbs model can help us to explore the likely direction of the Direct effect through scenario analysis, but that we do not think that we should rely on the precise predictions generated by the model. These considerations also apply in relation to the additional analysis we have undertaken.

NCCN 1101

7.115 Our additional analysis of inelastic demand scenarios indicates that NCCN 1101 may not create an incentive for EE to reduce any of its retail prices. In particular, our analysis suggests that EE has no incentive to reduce prices at any of the T-Mobile or Orange price points in any of the additional scenarios we have considered (see Annex 6 for detailed results).

7.116 We therefore continue to consider that the direction of the Direct effect in relation to NCCN 1101 is uncertain.

[315] Dobbs report, paragraphs 61-68.
[316] The only case where prices are predicted to rise is in the constant elasticity Dobbs 4 model, for cases where MNOs initially set fairly low retail prices.
[317] H3G's response to our Provisional Conclusions, pages 2 and 3.

NCCN 1107

7.117 As noted in paragraph 5.39 of the Provisional Conclusions, a number of EE's price points covered by NCCN 1107 are above the threshold retail price at which the retention per minute is maximised. For these price points, there is a clear incentive on EE to reduce these prices to at least the threshold price at which retention per minute is maximised, irrespective of the demand response. However, our additional analysis of inelastic demand scenarios indicates that NCCN 1107 may not create any incentive for EE to reduce its retail prices at these price points further (i.e. below the threshold retail price). In particular, our analysis suggests that EE has an incentive to reduce these retail prices only to the threshold retail price in all of the additional scenarios we have considered (see Annex 6 for detailed results).

7.118 Our additional analysis of inelastic demand scenarios also indicates that NCCN 1107 may not create an incentive for EE to reduce any of the price points covered by NCCN 1107 for which EE's initial retail price is below the threshold retail price. In particular, our analysis suggests that EE has no incentive to reduce prices at any of these price points in any of the additional scenarios we have considered (see Annex 6 for detailed results).[318]

7.119 Taking our additional analysis of inelastic demand scenarios into account, we no longer consider that we can say that the balance of available evidence suggests that it is more likely that EE will have an incentive to reduce most of its 09 price points.

7.120 We therefore consider that the direction of the Direct effect in relation to NCCN 1107 is uncertain.

NCCN 1046

7.121 Our additional analysis of inelastic demand scenarios indicates that NCCN 1046 may create an incentive for the MNOs to reduce retail prices for 080 calls even if demand for these calls is less responsive to a reduction in the retail. In particular, on the basis of the proxies we have used for each of the MNOs' average retail prices for 080 calls (see paragraph 6.32 of the Provisional Conclusions), our analysis suggests that all MNOs have an incentive to reduce retail prices in all of the additional scenarios we have considered (see Annex 6 for detailed results).

7.122 We therefore continue to consider that the direction of the Direct effect in relation to NCCN 1046 is more likely to be positive.

Mobile Tariff Package Effect

7.123 BT, EE, H3G and [✂] comment on the MTPE in their responses to our Provisional conclusions and we address the points that they make in this sub-section.

Views of the parties

7.124 BT refers to paragraph 39 of a recent BEREC report in relation to special rate services which states:

[318] We note that our additional analysis of inelastic demand scenarios does not consider the possibility of price increases, although these cannot be ruled out.

*"It may be the case that the high OTR is partially used by some OOs to lower the retail prices of other services used by the caller. This is usually called the waterbed effect... This could be a benefi**c**ial counter effect (for some customers) of the higher SRS prices. However, even under a full waterbed, the pricing structure of SRS relative to standard services gets distorted... This change in the relative structure of prices seems inefficient because, where SRS demand is depressed as a result of such higher prices, it would thus not be reflective of efficient or welfare-maximising price differentiation according to the relative demand elasticity's for the services in question... It is thus neither clear why an OTR higher than the average revenue for standard call would be efficient, nor why the OTR for mobile would be much higher than for fixed even when accounting for any differences in cost."*[319]

7.125 BT interprets this as meaning that the MTPE "*should be looked at with suspicion and probably should not be given significant weight in a proper welfare assessment".*[320]

7.126 DotEcon includes a survey of recent literature on the waterbed effect in its report prepared for BT, and argues that although the evidence is mixed, *"overall it suggests that there is evidence of a waterbed effect, but no coherent evidence that this effect is strong (say in excess of 50%)"*. On this basis, DotEcon argues that it is difficult to believe that the waterbed effect could be much stronger than 50%.[321]

7.127 EE contrasts our Provisional Conclusion that NCCN 1046 *"could"* result in a material negative MTPE on mobile customers with our provisional conclusion that NCCNs 1101 and 1107 are *"likely"* to result in a material negative MTPE. In relation to our calculation to illustrate the potential impact of NCCN 1046 on MNOs' profits on 080 calls (see paragraph 6.47), EE argues that the figures derived in the constant elasticity demand scenarios are lower bounds to what is plausible. EE argues that this is because an assumption of constant elasticity is likely to predict lower prices under ladder pricing than will result in practice (see paragraph 7.81). EE submits, therefore, that *"if the constant elasticity assumption implies even a small profit loss, then Ofcom can be confident that the actual profit loss is likely to be greater and so there is likely to be a MTPE"*.[322]

7.128 H3G agrees with Ofcom's assessment of the MTPE.[323] [✂][324]

Our views

7.129 The BEREC report on Special Rate Services referred to by BT in its response states that higher retail prices for special rate services and lower retail prices for other services may not be efficient even under a full waterbed effect. We recognised this

[319] "BEREC Report on Special Rate Services", 24 May 2012, paragraph 39.
[320] BT's response to our Provisional Conclusions, page 4.
[321] DotEcon report, paragraph 70.
[322] EE's response to our Provisional Conclusions, paragraphs 40 and 41.
[323] H3G's response to our Provisional Conclusions, page 3. For the avoidance of doubt, we did not provisionally conclude that the NCCNs will certainly result in a material negative MTPE on mobile customers as H3G suggests. We note that our Provisional Conclusion was that NCCNs 1101 and 1107 are likely to result in a material negative MTPE on mobile customers, and that NCCN 1046 could result in a material negative MTPE on mobile customers.
[324] [✂]

point in our NGCS review December 2010 consultation.[325] Consistent with this, in paragraph 3.100 of the Provisional Conclusions, we note that if retail prices of calls to the affected number ranges fall to the bottom rung of the termination ladder, we would expect the overall impact on mobile customers to be positive even under a full waterbed effect. However, we see no reason why this means the MTPE should be looked at *"with suspicion"* or given less weight in the welfare assessment. Accordingly, we do not accept BT's interpretation of the BEREC report.

7.130 We do not consider that the literature cited by DotEcon provides good reasons for revising our view on the strength of the waterbed effect. In particular, we do not consider that the evidence supports DotEcon's view that the upper bound for the waterbed effect should be around 50%, and note that DotEcon does not explain why they consider this to be the case on the basis of the literature presented. Therefore, we maintain our view that the waterbed effect exists and is significant, but that it is unlikely to be complete (see paragraphs 3.50-3.52 of the Provisional Conclusions).

7.131 In relation to EE's comments summarised in paragraph 7.127 above, we understand EE's contention to be that we should conclude that NCCN 1046 is *likely* to result in a material negative MTPE on mobile customers. The wording of our provisional conclusion in relation to the MTPE resulting from NCCN 1046 reflected the possibility that the MTPE could be relatively insignificant if the demand response was very strong, as implied in the constant elasticity demand scenario.[326] However, we also recognised that the MTPE could be significant if the demand response to a reduction in retail price was weaker.

7.132 Therefore, our final conclusions on the MTPE in relation to NCCNs 1101, 1107 and 1046 remain unchanged from our Provisional Conclusions.

Indirect effect

7.133 BT and EE comment on our assessment of the Indirect effect and we address the points made in the following sub-section. We discuss points in relation to the weighting of different types of consumers in the section concerning the overall effect on consumers.

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[325] *"Although the tariff package effect means that some of the higher charges for NGCs result in lower charges, say, for GCs and subscriptions, consumers may still be harmed overall. This is because the higher NGC prices are caused by some forms of market failure (i.e. lack of price awareness and the vertical and horizontal externalities, as set out above). So, even if OCPs may not make extra profits overall, by having to compete away these profits (if the tariff package effect was complete), the impact of the market failure on NGCs would translate in charges that are "too high" for that service and "too low" for the other services. This would lead to a different, and an inefficient, relative consumption of the two sets of services compared to a situation where the market failure was not present. As a result, the structure of prices does not reflect either callers' or SPs' preference. Therefore, we believe that there is a negative impact of the market failures in NGCs even in the presence of a complete tariff package effect."* NGCS review December 2010 consultation, paragraph A2.189: http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-numbers/summary/non-geo.pdf.

[326] We address EE's arguments relating to our use of the constant elasticity demand scenario in our theoretical analysis in paragraphs 7.83-7.86 above.

View of the parties

7.134 DotEcon comments on what it considers to be appropriate values for SP revenue pass-through. It argues that 100% of termination revenues will be passed onto SPs and states this is "*not at dispute*" given the replicability of the NCCNs.[327]

7.135 EE argues that we should not have regard at all to the Indirect effect, noting that the CAT found the Indirect effect was *"simply too uncertain and entailed an excessive level of investigation".*[328] EE argues that any beneficial Indirect effect is uncertain because it will only arise if (i) retail prices do not fall to the bottom rung; (ii) BT's increased termination revenue is passed through to SPs via revenue share; and (iii) SPs then use that revenue to improve services to the benefit of consumers. EE argues that this is unlikely *"in light of the relative short remaining time before the recommendations of the NGN review are expected to be implemented".*[329] Specifically, EE argues that pass-through requires that competition has time to develop both between TCPs and between SPs, which it considers unlikely within the next 18 months. EE also argues that SPs are unlikely to undertake new investment or provide new services in reliance upon temporary revenue share and industry arrangements. In addition, EE argues that, in any event, there would likely be a period of lag which could represent a substantial part of the 18 month period.[330]

7.136 O2 agrees with our Provisional Conclusions on the Indirect effect from NCCN 1046 (see paragraphs 6.56-6.61). It also agrees with our conclusion that, for revenue sharing number ranges, if an NCCN has an adverse impact on callers, that is likely to be determinative unless it is clear that there are material SP benefits which will be passed on to callers (see paragraph 3.76 of the Provisional Conclusions).[331]

Our views

7.137 As explained in the Provisional Conclusions, we would expect that competition between TCPs would result in a high rate of pass-through of additional TCP revenues to SPs in the medium to longer term (see paragraph 3.68). We also noted in paragraph 3.69, however, that in the shorter term pass-through may be more limited, reflecting the fact that it may take some time for TCPs to renegotiate contracts with SPs. Given the limited time for which the NCCNs will be in place (see paragraph 3.68), we consider this creates significant uncertainty regarding the degree of any increase in TCP revenues which would be passed through to SPs.

7.138 We recognised all of the points made by EE in its response in our Provisional Conclusions, and consider that we appropriately factored these into our assessment of the Indirect effect from NCCNs 1101 and 1107.

7.139 Therefore, our final conclusions on the Indirect effect remain unchanged from our Provisional Conclusions.

[327] DotEcon report, paragraph 65.
[328] EE's response to our Provisional Conclusions, paragraph 42.
[329] EE's response to our Provisional Conclusions, paragraph 45.
[330] EE's response to our Provisional Conclusions, paragraph 44-45.
[331] O2's response to our Provisional Conclusions, page 2.

Competition effect

7.140 We received responses from BT and [✂] regarding the competition effect. BT criticises the framework we use to assess the competition effect. A number of other issues are raised which we discuss and address in this section.

Framework for assessing competition

Views of the parties

7.141 BT considers that positive competition effects should not solely be considered under Principle 2 and that by doing so, Ofcom does not give sufficient prominence to those effects as envisaged by paragraph 8.2 of the EU Framework Directive. BT encourages Ofcom to give full weight to the totality of all positive competition effects and seeks clarification on our interpretation of the consumer and competition effects.[332]

7.142 DotEcon, in its report prepared on behalf of BT, argues that Ofcom's approach of including a competition effect to be weighed in with other cost and benefits "*is incoherent, as within a cost benefit analysis what matters is the overall effect on consumers, which should in any case be captured by other effects*".[333] DotEcon argues that such approach fails to acknowledge promotion of competition as a distinct and separate objective for Ofcom, as opposed to creating benefits for consumers in the short-run.[334]

Our views

7.143 We discuss the framework used in our assessment of the Competition effect at paragraphs 3.22, 3.87 and 3.89 above. These paragraphs explain that our assessment of the impact of the NCCNs on competition forms part of our assessment of whether they provide an overall benefit to consumers and that in this regard we consider that it is relevant to consider the beneficial effects on competition as well as the potential distortion to competition resulting from the introduction of the NCCNs. Our conclusion on the Competition effect follows from our conclusion on the other parts of Principle 2. In light of our overriding statutory duties to further the interests of consumers, we place greater weight on the potential risk of harm to consumers.

7.144 Our approach is supported by the comments made by the CoA in the CoA Judgment that competition is not an aim in itself, but should be for the benefit of consumers.[335] This is reflected in the framing of Ofcom's principal duty in section 3 of the 2003 Act which, as the CoA noted, is *"to further the interest of consumers in relevant markets, **where appropriate*** [CoA's emphasis] *by promoting competition*".[336] The CoA also recognised that the desirability of promoting competition in relevant markets was one of the matters to which Ofcom is to have regard, where relevant, under section 3(4)(b) and that promotion of competition is one of several objectives identified in Article 8 of the Framework Directive. The CoA added that where there is any conflict

[332] BT's response to our Provisional Conclusions, page 3
[333] DotEcon report, paragraph 39.
[334] DotEcon report, paragraph 39.
[335] CoA Judgment, see paragraphs 83-90.
[336] CoA Judgment, see paragraph 83.

between any of the Community Requirements, it is for Ofcom to resolve that conflict as we think best in the circumstances[337] (in accordance with section 4(11) of the 2003 Act taking into account the uncertainty as to whether the NCCNs will produce benefit or harm to consumers, the likely effect as regards competition, and having regard to Ofcom's overriding statutory duties to further the interests of consumers).

Competition between TCPs for SPs

Views of the parties

7.145 In its report prepared for BT, DotEcon argues that Ofcom has significantly understated the importance and impact of competition amongst TCPs in the form of tiered termination rates. DotEcon explains that the impact arises because a TCP introducing tiered rates would earn more revenue for its SPs and would start to win SP business from other TCPs. This would create an incentive for other TCPs to respond with similar (or better) tariff innovations, strengthening the incentives for OCPs to cut retail prices.[338]

Our views

7.146 We considered whether competition between TCPs offering tiered termination rates might result in benefits to callers in paragraphs 3.91-3.93 of the Provisional Conclusions, and concluded that this was not likely. In particular, we expressed the concern that, whilst TCPs may have an incentive to introduce tiered rates that result in higher termination revenues to the benefit of SPs, it was unclear that TCPs would have an adequate incentive to introduce tiered rates that were to the benefit of mobile customers.

7.147 DotEcon argues that TCPs can be expected to introduce tiered charges that are similar to BT's NCCNs, and explains that this will reduce the dilution effect discussed at paragraphs 7.94-7.100. As discussed in those paragraphs, we recognize that some TCPs have chosen to implement identical or similar schedules to the Disputed NCCNs, and our analysis allows for this by assuming that there is no dilution effect.

7.148 DotEcon does not address our concern that TCPs may not have an incentive to introduce a tiered termination rate that would result in a stronger incentive to reduce retail prices than BT's NCCNs (i.e. a 'steeper' tiered rate schedule), and our observation that TCPs in fact may have an incentive to increase their termination rates in order to offer a revenue share to their SP customers that is competitive with that offered by BT. We therefore remain of the view that competition between TCPs cannot be relied upon to ensure consumer benefits.

General approach to tiered rates

Views of the parties

7.149 DotEcon argues that if we were to prevent BT from implementing the disputed NCCNs, we would effectively be preventing any TCP from implementing any ladder pricing termination rate schedule or similar wholesale tariff. DotEcon says that in

[337] CoA Judgment, see paragraphs 83-90.
[338] DotEcon Report, see paragraphs 40-44.

making this policy choice, we should assume that competition between TCPs would lead to widespread use of similar wholesale tariffs, with consequent strong impact on OCPs' pricing incentives. DotEcon also argues that we should not discount any net benefits from ladder pricing on the grounds that we might intervene in the NGCS market because our proposals, if implemented, would take time to put in place. It goes on to suggest that it is unclear how successful our proposals might be and that, even if implemented, there may therefore remain a role for wholesale tariff innovation in correcting misaligned incentives within the NTS value chain.[339]

7.150 [✂].[340]

Our views

7.151 We disagree with DotEcon that finding against the Disputed NCCNs would effectively rule against all forms of wholesale tariff innovation. We consider that if the tariff schedule is above the constant retention line (see paragraphs 3.31-3.32), then there is a clear incentive to reduce retail call price down to the bottom step of the tiered termination schedule, in which case we consider that the benefits to callers are likely to be positive. As noted at paragraph 1.8, we consider it could be fair and reasonable for BT and other TCPs to introduce tiered WTCs (provided that the three principles were met). However, [✂], we therefore do not consider it appropriate to make a statement to industry stating such charging mechanisms are inappropriate. We consider that the reasoning and analytical framework set out in this document provides clear guidance to industry as to how we will consider ladder rates. Given that we would need to assess each set of rates submitted to us as a dispute on its merits, we do not consider it appropriate to provide any further guidance than this.

7.152 With respect to DotEcon's point that we should assume competition between TCPs would lead to widespread use of similar wholesale tariffs, we note that this is exactly how we have modelled the Direct effect – i.e. we have assumed there is no dilution effect. Our findings suggest that if all TCPs implemented identical wholesale tariffs to the Disputed NCCNs, there is a risk of material detriment to consumers.

7.153 In relation to our proposals for the NGCS market, we have not discounted the potential benefits from ladder pricing because, as DotEcon seems to imply, we think they would will deliver similar benefits if implemented as proposed. We have taken the proposals for NGCS into account only in so far as they would affect the likely period in which the Disputed NCCNs would be in place. As noted in paragraph 3.43, their introduction would put a natural expiry date on the NCCNs, which we noted could affect both the duration and magnitude of both costs and benefits. The likely effectiveness or otherwise of our NGCS proposals does not have any bearing on our estimates of either the likely harm or benefit to consumers from the Disputed NCCNs.

7.154 We recognise the potential for the Disputed NCCNs to mitigate some of the problems we have identified in the market for NGCS, which our proposals are designed to address and take this into account in the additional weight we place on the Direct effect. However we disagree with DotEcon's suggestion that tiered termination rates may be more effective in addressing our concerns about the market for NGCS than our proposals. We considered whether tiered termination rates would adequately

[339] DotEcon report, paragraphs 45-48.
[340] [✂]

address our concerns about the market as part of our NGCS review December 2010 consultation, and found they would not.[341] Thus whilst recognising tiered termination rates may mitigate some of our concerns, we do not consider they would address all of our concerns as effectively as our proposed remedies.

Overall effect on consumers

7.155 All the MNOs and [✂] broadly support our assessment of the overall effect of the Disputed NCCNs on consumers.

7.156 On the other hand, BT believes that Ofcom did not properly analyse the level of uncertainty, and argues that our underlying framework, the assumptions we made and the sources of uncertainty we refer to are not transparent in the Provisional Conclusions. BT notes that Professor Dobbs and DotEcon have developed a model which *"takes the common framework and can look at all welfare flows on a mutually consistent basis thereby facilitating a transparent and coherent analysis of overall welfare given any set of assumptions of the underlying parameters".*[342] BT argues that this analysis shows that the probability of a bad outcome for consumers, for example for NCCN 1046, is extremely low and a good outcome for consumers extremely high. BT has since submitted the Monte Carlo Analysis which seeks to account for uncertainty in the value of various input factors.

7.157 We respond to the points made by the Parties under the following headings:

- Weighting of the Direct effect (paragraphs 7.158-7.165)
- Scenarios where we can be confident of the overall impact on consumers (paragraphs 7.166-7.173)
- DotEcon's trade-off framework (paragraphs 7.174-7.182)
- Professor Dobbs' welfare assessment (paragraphs 7.183-7.198)
- Monte Carlo analysis (paragraphs 7.199-7.208)
- Treatment of uncertainty in benefits (paragraphs 7.209-7.215)
- Weighting of the different types of consumer (paragraphs 7.216-7.225)
- Conclusion on consumer welfare analysis (paragraphs 7.226-7.230)

Weighting of the Direct effect

Views of the parties

7.158 In his description of our approach to the overall welfare assessment, Professor Dobbs suggests that the only externalities that we consider are those benefits SPs

[341] Paragraphs A4.54 - A4.96.
[342] BT's response to our Provisional Conclusions, page 3.

receive from additional calls over and above the termination payment, and that we give this externality zero weight in our assessment.[343]

7.159 O2 and EE state that they agree that the Direct effect should not be given any additional weighting in the case of the NCCNs under consideration.[344] Specifically, EE argues that Ofcom's decision to place no additional weight on the Direct effect in respect of each NCCN if that NCCN does not result in significant price reductions is supported by the fact that there is no evidence that the externalities associated with retail prices which diverge from the preferences of consumers and/or service providers would be addressed by a small reduction in retail prices. In addition, EE argues that it would be disproportionate to give extra weight to a Direct effect which did not address Ofcom's specific policy concerns.[345]

7.160 Both H3G and O2 argue that because the wholesale tariff schedules operate on the basis of average retail prices, it is not necessarily the case that price reductions would address the externalities set out in paragraph 3.99 of our Provisional Conclusions.[346] O2 argues that this is the case even if prices were to fall to the bottom rung of the tiered termination schedule. O2 believes that the profile of retail charges, rather than their average, is important in determining the extent to which any externalities might be addressed.[347]

Our views

7.161 We agree with O2 and EE that the additional weight placed on the Direct effect to reflect the possible externalities depends on the extent of the Direct effect. As a result, we place limited additional weight on the Direct effect unless there is a full price reduction to the bottom tier. To see why, we consider each externality in turn:

- **Alleviation of suppressed or distorted demand to calls to the affected number ranges through improving the meaning and value to customers of the reputations of these number ranges.** We found in the NGCS review that demand for NGCs is currently being suppressed by consumers' lack of price awareness and resulting lack of confidence in these numbers. If tiered termination rates were to align mobile call prices with the price of calls from a BT landline, this would significantly improve price transparency, and thereby consumer confidence, as SPs would be able to advertise meaningful prices to their customers. However, this would require that mobile call prices be very closely aligned with BT's prices. As the bottom rung of each of the disputed NCCNs is above BT's own retail price by a minimum of 2 ppm, we consider that there would need to be a very significant, and probably full, price reduction for this effect to operate.[348]

[343] Dobbs report, paragraphs 88-91 and Table 5.
[344] O2's response to our Provisional Conclusions, page 6; EE's response to our Provisional Conclusions, paragraphs 38-39.
[345] EE's response to our Provisional Conclusions, paragraph 39.
[346] H3G's response to our Provisional Conclusions, page 3; O2's response to our Provisional Conclusions, page 6.
[347] O2's response to our Provisional Conclusions, page 7.
[348] See paragraph 4.127 of the Provisional Conclusions.

- **Improvement of SP incentives to invest resulting from an alignment of retail call prices with SP preferences.** We found in the NGCS review that OCPs lack sufficient incentives to take SP preferences into account when setting retail prices. We considered that the inability of SPs to control retail prices, such as achieving a consistent price across a range of OCPs that it can reliably advertise, tended to limit SP incentives to invest in higher quality services or innovative offerings.[349] If a tiered termination rate schedule led to mobile call prices for NGCs being closely aligned with BT's retail prices, it would give SPs greater control over the price their callers are charged through their selection of that number range. However, as with improvements to price transparency, this would only be the case if mobile call prices were very closely aligned with BT's prices. As a result, we again consider there would need to be a very significant, and probably full price reduction for this effect to operate.

- **Improvement of SP incentives to invest resulting from an increase in call volumes.** We also found in the NGCS review that suppressed demand for NGCs meant that some services which would be viable if customers had more confidence in these numbers were not currently attractive for SPs. As noted above, we consider the Direct effect would only lead to a material improvement in consumer confidence if it led to mobile call prices being very closely aligned with BT's own prices, which would require a very significant price reduction. For this reason, we therefore consider this effect is only likely to operate for very significant, and probably full price reductions.

7.162 We also accept H3G and O2's argument that the profile of retail prices for calls to the affected number ranges is relevant to the externalities we identified in paragraph 3.99 of the Provisional Conclusions. At the same time, we note that a significant reduction in the average retail price can only be achieved through significant reductions in individual retail prices that affect a significant proportion of customers that make calls to the affected number ranges. Therefore, we consider that the externalities are likely to be addressed to some extent in the event of very significant price reductions, but accept that the effect may be dampened depending on the actual profile of prices adopted by the MNOs.

7.163 In relation to Professor Dobbs' comment regarding the weight we place on external benefits to SPs, we note that (as explained in paragraph 3.99 of the Provisional Conclusions) we consider it appropriate to place greater weight on the Direct effect only to the extent to which there are likely to be external benefits for callers. Professor Dobbs is therefore correct to state that we apply no weight to the external benefits SPs receive from additional calls (i.e. over and above the termination payment they receive). We recognise that these external benefits to SPs may exist, for example an SP using a non-geographic number as a sales enquiries line is likely to achieve a greater number of sales if it receives a greater number of calls. However, we see no reason to believe that callers are more likely to benefit from an increase in SP welfare that is due to the external benefit to SPs of receiving additional calls than they are from an increase in SP welfare that is due to an increase in termination revenue. For this reason, we consider these external benefits to SPs should be treated in the same way as increases in termination payments to

[349] NGCS review April 2012 consultation, see paragraph A8.464.

SPs, i.e. only those benefits which are passed on to callers are likely to be determinative (see paragraphs 3.75-3.76 of the Provisional Conclusions).

7.164 The external benefits we identify above include two channels through which SP incentives to invest may potentially be enhanced, and which provide benefits to SPs- namely (i) the closer alignment of retail prices with SPs' preferences and/or (ii) the increase in call volumes due to improvements in consumer confidence. However, we only place weight on these effects to the extent they result in an increase in service quality and availability for callers. We also note there is a distinction between the effect Professor Dobbs identifies – a straightforward increase in SP welfare resulting from additional calls – and the investment incentive externality we identify, which derives from the fact that we consider investment is currently being dampened by lack of consumer confidence in NGCs.[350]

7.165 In any event, given our findings in relation to the Direct effect resulting from the NCCNs in dispute, we continue to consider that it is uncertain whether the NCCNs would address these externalities to a material extent. Therefore, we continue to place limited additional weight on the Direct effect in our assessment of the overall effect on consumers of the NCCNs.

Scenarios where we can be confident of the overall impact on consumers

Views of the parties

7.166 DotEcon argues that there is no uncertainty about the overall welfare impact in the full price reduction scenario as we can immediately conclude that there is a net welfare benefit. It acknowledges that there is the theoretical possibility of losers and gainers amongst consumers, but argues that the overall distributional consequences can be expected to be positive on the basis that mobile-only households – who have no option but to ring NTS numbers from mobiles – tend to be poorer. DotEcon suggests that it is only mobile users who seldom ring the affected number ranges that might be *"(slightly) adversely affected due to the waterbed effect"*.[351]

7.167 O2 argues that consumers would suffer detriment even in the full price reduction scenario.[352] O2 argues that NGCs are relatively inelastic compared to other mobile services, and as a result, the reduction in demand for other mobile services following corresponding price increases due to the waterbed effect will outweigh the increase in demand for non-geographic (i.e. 080) calls. O2 understands that Ofcom had previously reflected this effect within the MTPE.[353]

7.168 DotEcon also comments on the welfare impact of the MTPE. It suggests that the consumer surplus effect can be ignored on the basis that it is reasonable to assume that there is no impact on the level of demand for these services as the price

[350] In this connection, we note that some aspects of DotEcon's description of our taxonomy of effects (see DotEcon report, paragraphs 22-27) are incorrect.
[351] DotEcon report, paragraph 33.
[352] O2 makes this argument specifically in relation to NCCN 1046, although we understand it to apply more generally.
[353] O2's response to our Provisional Conclusions, page 11.

increase is itself small, and tariff complexity further decreases the likely quantity response.[354]

Our views

7.169 In paragraph 4.87 of the Provisional Conclusions, we explained that the welfare impact of price changes on other mobile services and NGCs will depend on the extent of the price changes and the elasticity of demand for each service.

7.170 We recognise that an increase in the price of other mobile services due to the waterbed effect could result in a reduction in demand for these services, and that in principle the impact of any such reduction in demand for other mobile services on mobile subscribers should be taken into account in our assessment.

7.171 If MNOs choose to increase the prices of a large number of services in response to a reduction in profits on calls to the affected number ranges, the percentage price increase is likely to be small. In this case, we agree with DotEcon that it is reasonable to assume that there would be no impact on the level of demand for these services. However, as we recognised in paragraph 4.87 of the Provisional Conclusions, there is uncertainty around which (or how many) services the MNO will choose to increase the prices of, and therefore whether and to what extent there will be an impact on the level of demand for other services in response to the MTPE. For example, if price increases are concentrated on just a small number of services, the percentage price increase would be considerably larger, making a demand response much more likely.

7.172 This uncertainty was reflected in our view that it is not possible to precisely quantify the MTPE (see, for example, paragraph 4.88 of the Provisional Conclusions). Moreover, in our assessment of the overall effect on consumers, we acknowledged that the impact of the MTPE on consumer welfare can be expected to depend on the particular prices for other services that MNOs choose to increase (see, for example, paragraph 4.92).

7.173 We accept that it is theoretically possible that mobile customers would suffer detriment even in the full price reduction scenario. However, it remains our view that we would generally expect the overall impact on mobile customers to be positive in the full price reduction scenario, given that the waterbed is likely to be less than 100%, call volumes to the affected number ranges are likely to be at least somewhat responsive to price and positive externalities are possible (see paragraph 3.100 above).

DotEcon's trade-off framework

Views of the parties

7.174 DotEcon presents a trade-off framework based on a diagram presented during the 08x cases, which it argues can be used to assess whether there are overall net benefits from the Disputed NCCNs. [355]

[354] DotEcon report, paragraph 31.
[355] DotEcon report, Section 3.1, page 15.

7.175 The framework expresses the costs and benefits of the NCCNs using only four unknown variables: (i) the strength of Direct effect externalities; (ii) the extent of the waterbed effect; (iii) the weight attached to SP benefits; and (iv) the strength of the incentive to cut retail price. DotEcon derives an expression for each of the Direct effect, Indirect effect and MTPE in terms of these variables in both the "no price reduction" and "full price reduction" scenarios. DotEcon then sums the three effects in each scenario to arrive at an expression for net welfare.

7.176 Under the simplifying assumption that costs and benefits are approximately linear between these "full price reduction" and "no price reduction" scenarios, DotEcon argues it is possible to estimate a "rough breakeven point" for the percentage retail price fall at which the net welfare effect is zero. This is the smallest percentage price decrease that achieves net benefits for given values of the four variables above.[356] In deriving its trade-off framework, DotEcon also assumes that the MTPE reaches its maximum in the "no price reduction scenario" and its minimum in the "full price reduction scenario". It argues this is because if the WTC schedule creates incentives for the OCP to decrease its price, it must be that the profit impact (and therefore the MTPE) is smaller the greater the price reduction.[357]

7.177 In presenting its framework, DotEcon comments on our treatment of the potential effects, stating that our identification of these effects is largely uncontroversial.[358] Nonetheless DotEcon describes its understanding of our classification of these effects for the purposes of clarity. In this context, DotEcon states that we were not explicit about the sources of external benefit considered under the Direct effect and argues these should include external benefits to accruing to SPs (and OCPs) as well as those accruing to callers.[359] It also comments on our treatment of additional revenues to SPs, which it says we divide into those deriving from an increase in the per minute termination rate and those deriving from an increase in call volumes. DotEcon states that we consider the former under the Indirect effect and the latter under the Direct effect.[360]

Our views

7.178 We note DotEcon's broad agreement with our identification of the potential effects of the NCCNs. However, there appear to be two points within our framework that would benefit from further clarification, namely our treatment of external benefits under the Direct effect and our treatment of additional revenues accruing to SPs.

7.179 We provide further detail on the sources of external benefits from the Direct effect in paragraph 7.161. We note here that these only include external benefits to callers, and do not include the external benefits to SPs or OCPs identified by DotEcon. In particular, we place weight on any improvements to SPs' incentives to invest only in so far as this leads to benefits to callers from improvements in service quality and availability.

7.180 In relation to our treatment of additional revenues to SPs, we include the entirety of these revenues in our consideration of the Indirect effect (which we defined in our

[356] DotEcon report, paragraphs 63-89.
[357] DotEcon report, paragraph 61c.
[358] DotEcon report, paragraph 20.
[359] DotEcon report, paragraph 23.
[360] DotEcon report, paragraph 26.

provisional conclusion as the impact of BT's NCCNs on SPs' revenue and, through any knock-on impact on service quality and availability, on consumers who call the affected number ranges)[361]. As a result, it is not the case that there is no Indirect effect in the full price reduction scenario as SPs (and thereby callers) may still benefit from an increase in total termination revenue as a result of increased call volumes.

7.181 We now turn to DotEcon's trade-off framework itself, which we do not consider relevant to our assessment for the following reasons:

(i) **It only applies in the full price reduction scenario.** The DotEcon framework is derived by assuming the MTPE is decreasing in line with the extent of retail call price reduction, reaching its minimum when the retail call price falls to the bottom tier of BT's NCCNs. However, this is only true when the MNO has a clear incentive to reduce its retail call price to the bottom tier. In partial price reduction scenarios, the MNO's profits are maximised (and the MTPE therefore minimised) at a retail call price which is higher than that corresponding to the bottom tier. DotEcon's diagram does not apply to these scenarios.[362]

(ii) **It does not address the uncertainty regarding the Direct effect.** In the full-price reduction scenario, DotEcon's framework can identify the minimum price reduction necessary to ensure a positive overall benefit to SPs and callers. However, as noted in paragraphs 7.104-7.106, the source of our uncertainty is not the extent to which MNOs would act on an incentive to reduce prices to a particular profit-maximising point but rather how to identify this profit-maximising point in the first place, given the uncertainty surrounding its key determinants. The DotEcon framework does not shed any light on this uncertainty.

7.182 As a result, we do not draw on DotEcon's trade-off framework in our assessment of the welfare impact of BT's NCCNs.

Professor Dobbs' welfare assessment

Views of the parties

7.183 Professor Dobbs argues that a framework for quantitatively assessing overall welfare benefits to consumers is "crucial" to deciding whether or not to allow the NCCNs, and considers that in the absence of quantification, the conclusion is naturally uncertain.

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[361] We recognise that this treatment of the Indirect effect differs from that adopted in the 08x cases, where we only considered increases in SP revenue resulting from an increase in the termination rate under the Indirect effect. In the 08x cases, we considered the increases in SP revenue resulting from an increase in call volumes separately under the additional weighting placed on the Direct effect. This difference does not represent a fundamental change in approach but a re-categorisation of effects intended to simplify our illustrative calculations (it would have required an extra step in our modelling to split out the SP revenue impact into the termination rate and volume increase components). We have taken this re-categorisation into account in the externalities we consider under the Direct effect to avoid double-counting the impact on SP revenues from an increase in call volumes. In particular, we place additional weight on the Direct effect to the extent that there are significant increases in call volumes resulting from greater consumer confidence, which allows for the introduction of services that are not currently viable- but not from marginal increases in call volumes which simply increase the revenues received by existing SPs.

[362] It is also not necessarily the case that the Indirect effect is maximised in the "no price reduction scenario" and minimised in the "full price reduction scenario", which DotEcon's framework also assumes (as a result of its misunderstanding of our treatment of this effect). The Indirect effect will be maximised when BT's revenues are maximised, which could be below the "full price reduction scenario" if the demand response is sufficiently large.

In his view, the various welfare effects can be measured, to give an overall net welfare effect.[363]

7.184 Professor Dobbs outlines the different elements which he considers are relevant to measuring the change in economic welfare, and proposes weights to different classes of welfare benefit.[364] He then uses these weights to calculate the net effect on consumer welfare using the Dobbs 3 and Dobbs 4 models.

7.185 Professor Dobbs conducts a limited analysis of NCCN 1046 along these lines, and concludes that it is highly likely to deliver overall welfare benefits to consumers.[365] Professor Dobbs states that he would expect to find similar results for other tariffs, but acknowledges that more work needs to be done.[366]

7.186 Professor Dobbs suggests two forms of sensitivity analysis.[367] The first incorporates uncertainty over whether retail price reductions will occur or not, and is discussed in paragraph 7.102 above in more detail. The second form of sensitivity involves aggregating the welfare consequences of the NCCNs across MNOs. Professor Dobbs suggests that an analysis of this nature may find overall benefits even where some MNOs increase price if this is offset by the benefits of price reduction by other MNOs.

Our views

7.187 We accept Professor Dobbs' proposition that it is possible to mathematically calculate the welfare effects implied by the model (given a number of assumptions). However, we do not consider that such calculations can be used to draw robust conclusions about the likely overall welfare impact of the NCCNs in this case.

7.188 First, calculating the overall welfare impact implied by the predictions of a theoretical model (in Professor Dobbs' case, the Dobbs 3 and Dobbs 4 models) involves placing reliance on the precise predictions of that model, namely, the magnitude of the Direct effect. We explained in paragraph 3.41 of the Provisional Conclusions that there is considerable uncertainty about whether the modified Dobbs model we used for our theoretical assessment accurately reflects the basis on which MNOs make their pricing decisions in practice. This point applies to a greater or lesser extent to all of the theoretical models advanced in these disputes, and for this reason we remain of the view that we should not rely on the precise predictions generated, particularly in relation to the magnitude of the Direct effect.

7.189 Moreover, Professor Dobbs' calculations of the net effect on consumer welfare are limited to using the outputs from the Dobbs 3 and Dobbs 4 models with a linear spillover effect. For the reasons set out in paragraphs 7.74-7.77, we are concerned that reliance on the Dobbs 4 model may give an exaggerated view of the potential Direct effect. We also recognise in paragraph 7.78 that the Dobbs 3 model may also overstate the incentive to reduce call prices if the impact of a reduction in retail call price on call volumes is more limited than implied by the assumptions used in the Dobbs 3 analysis. In order to explore this possibility in our assessment of the Direct

[363] Dobbs report, paragraph 10.
[364] Dobbs report, paragraphs 87-94.
[365] Dobbs report, paragraphs 110-117.
[366] Dobbs report, paragraph 84.
[367] Dobbs report, paragraph 121-125.

effect, we have carried out some limited additional analysis to assess the potential impact of inelastic call demand in the absence of a significant spillover effect (see paragraph 7.79).

7.190 For the purposes of illustration, we have calculated the overall welfare effect on callers from the NCCNs using the outputs of our theoretical assessment of the Direct effect. This includes both the outputs from the modified Dobbs model assuming elastic demand (as implied by the Lerner condition) which we used in our Provisional Conclusions, as well as our limited additional analysis assuming inelastic demand in the absence of a spillover effect.

7.191 We have adopted a similar overall framework to that suggested by Professor Dobbs, except that we only calculate the possible overall effect of the NCCNs on *callers* (both those who make mobile calls to the affected number ranges and mobile subscribers more generally). Therefore, our calculation includes the benefits to callers resulting from the Direct effect and detriment from the MTPE.

7.192 We do not include benefits to SPs in our calculation. This is because, if an NCCN has an adverse impact on callers, we place significantly greater weight on that effect unless it is clear that there are material SP benefits which will be passed on to callers (see paragraph 3.76 of the Provisional Conclusions). In addition, as a result of the considerable uncertainty about the extent to which SP benefits get passed on to callers (discussed at paragraphs 3.67-3.76 of the Provisional Conclusions), our calculation does not include any estimate of the benefits to callers through the Indirect effect.

7.193 Moreover, we do not place additional weight on the Direct effect in our calculation to reflect the externalities we have identified (see paragraph 3.99), given it is uncertain whether the NCCNs would address these externalities to a material extent (see paragraph 7.165).

7.194 Our approach is set out in more detail in Annex 5. The results of these calculations for each of the NCCNs in dispute are set out in Annex 6, where our estimates of the overall effect on callers are given as a range, depending on the assumed strength of the MTPE.[368]

7.195 In summary, we find that there are scenarios for each NCCN in which there is a risk of a material detriment.

7.196 Therefore Annex 6 illustrates that whilst there are plausible scenarios in which the NCCNs result in benefits for callers, there are also plausible scenarios in which there is a risk of material harm to callers. Depending on the elasticity of demand and the strength of the MTPE, the NCCNs could result in material net benefit or material net detriment to callers. We have not seen empirical evidence that would enable us to rule out the scenarios in which callers suffer detriment, or reach a robust view as to the likelihood of alternative scenarios. Therefore, we are unable to rule out the risk of material detriment to callers under all of the NCCNs in dispute.

[368] In order to quantify the MTPE, we use a range of values for the strength of the waterbed effect, from 40% to 80%. For the avoidance of doubt, we have adopted this range for illustrative purposes only and it should not be interpreted as our view on the precise upper and lower bounds for the strength of the waterbed effect.

7.197 We have considered whether it would be appropriate to place additional weight on the Direct effect, which would be sufficient to change our view that there is a risk of material detriment to callers under each of the NCCNs in dispute. However, for the reasons set out at paragraphs 7.161-7.65, we place limited additional weight on the Direct effect, and so do not consider that this changes our view that there is a risk of material detriment to callers under each of the three NCCNs in dispute.

7.198 In relation to Professor Dobbs' suggestion that the welfare consequences of the each NCCN should be aggregated across MNOs, we note that for the purposes of calculating the overall welfare effect of each NCCN, we have summed the welfare estimates over all MNOs party to the Disputes. In doing so, we find that we are unable to rule out the risk of material detriment to consumers under all of the NCCNs in dispute.

Monte Carlo analysis

BT's views

7.199 The Monte Carlo analysis submitted by BT seeks to account for uncertainty in the value of various input parameters using Monte Carlo simulation.

7.200 BT's approach uses the Dobbs 4 framework to predict post-NCCN retail prices. The analysis assumes a linear spillover function, but applies a weighting parameter to explicitly take account of the possibility that the spillover effect may be weaker than implied by this due to attenuation from competitive conjecture.[369] BT calculates the implied overall welfare impact using the framework proposed by Professor Dobbs (discussed at paragraphs 7.183-7.86 above). BT includes benefits to SPs in the overall welfare calculation, giving them a weight of 50%. However, it also notes that *"even if no weight is given to payments to SPs the results are still robust"*.[370]

7.201 In its analysis, BT assigns a probability distribution to each uncertain input parameter, which includes specifying mean values, standard deviations and upper and/or lower bounds.[371] The overall welfare calculation is then simulated 100,000 times, each time drawing a different set of parameter values at random based on their probability distributions. The outcomes are then used to generate a frequency distribution for the overall welfare impact, which is intended to give an understanding of the likelihood of different outcomes occurring.

7.202 BT argues that the results of this analysis show that overall there is a "minimal probability" of consumer welfare harm, and so "*rejecting tiered pricing is implicitly putting an extremely large (almost infinitely large) weight on possible consumer harm relative to consumer benefit"*. BT argues that there are no grounds for doing so and

[369] BT explains that *"this is the extent to which an individual MNO, knowing that a WTS would apply to other MNOs, might conjecture the response of other MNOs and react based on this conjecture"* Monte Carlo analysis, page 12.
[370] Monte Carlo analysis, footnote 18.
[371] The parameters BT assumes to be uncertain are: current retail price (modelled as a discount on the headline rate), demand elasticity, shape of the demand curve, strength of the spillover effect, marginal cost of origination, strength of the waterbed effect, extent of revenue pass-through to SPs, and size of any externalities (modelled by placing greater weight on the Direct effect).

believes that the results provide sufficient evidence to conclude that the introduction of the NCCNs will lead to significant consumer benefits.[372]

7.203 BT notes that the report *"provides a framework for further analysis"* and that it is possible to *"explore the consequences of alternative assumptions concerning parameter distributions and functional forms". BT states that "preliminary work in this direction suggests that the results ... are robust [to alternative assumptions]"*.[373]

Our views

7.204 We do not consider that BT's analysis provides a reliable basis for concluding that the probability of net detriment to consumers is very small whilst the probability of significant positive welfare benefits is large.

7.205 BT's calculation of the overall welfare impact is based on the Dobbs 4 framework with a linear spillover effect. For the reasons set out in paragraphs 7.74-7.77, we do not consider that it is appropriate for us to rely on the Dobbs 4 model to analyse the Direct effect in inelastic demand scenarios. In particular, we are concerned that the inclusion of a significant spillover effect in the the Dobbs 4 model may give an exaggerated view of the potential Direct effect, and therefore the welfare impact on consumers. We recognise that BT's formulation includes an additional parameter to take account of the possibility of competitive conjecture, which has the effect of reducing the positive impact on the profits earned on other mobile services that result from the assumed spillover effect (i.e. the second effect set out in paragraph 7.75). However, the inclusion of this parameter does not allay our concern. This is because the probability distribution which BT assigns to this parameter means that, in practice, its value is typically between 0.5 and 1, which still implies a significant spillover effect.

7.206 In addition, BT's inclusion of benefits to SPs in the overall welfare calculation does not reflect the approach we have adopted. Specifically, as explained in paragraph 3.76 of the Provisional Conclusions, if an NCCN has an adverse impact on callers, we place significantly greater weight on that effect unless it is clear that there are material SP benefits which will be passed on to callers. Although BT states that the results are robust even if no weight is placed on these benefits, its report does not include any results to support this claim. Our analysis indicates that there are plausible scenarios in which there is a risk of material harm to callers (see paragraphs 7.195-7.196).

7.207 More fundamentally, BT does not provide any additional empirical evidence to support its assumptions about the probability distribution assigned to each uncertain input parameter. Given it is these probability distributions that combine to determine the frequency distribution of the overall welfare impact, we consider that in the absence of empirical evidence to support these assumptions, the results of BT's analysis do not provide us with a robust view of the likely overall welfare impact. Although BT claims that preliminary work suggests the results are robust to alternative assumptions concerning parameter distributions and functional forms, our analysis suggests that there are plausible scenarios in which there is a risk of material harm to callers (see paragraphs 7.196 and 7.215).

[372] Monte Carlo analysis, page 56
[373] Monte Carlo analysis, page 56.

7.208 Moreover, we note that BT's analysis does not take account of a key source of uncertainty which we identified, namely, that the theoretical modelling of the Direct effect is a stylised representation of reality and may not accurately reflect the basis on which MNOs make their pricing decisions in practice (see paragraph 3.41 of the Provisional Conclusions).

Treatment of uncertainty in benefits

Views of the parties

7.209 Professor Dobbs questions why any significant asymmetric weighting should be used when assessing expected benefits to customers. He argues that, in this case, the amounts of money gained or lost by each individual customer are relatively small, and so the value placed on gains and losses should be weighted equally, in line with standard economic theory. Moreover, Professor Dobbs argues that applying an unduly asymmetric weighting is likely to run counter to customers' best interests as, in this case, it leads to the rejection of tariff proposals which have positive overall expected benefits for consumers.[374]

7.210 Professor Dobbs argues that uncertainty, in itself, is not a ground for refusing to allow a change and what matters in the presence of uncertainty are the chances of overall benefits *vis a vis* the chances of overall dis-benefits. Professor Dobbs argues that *"Ofcom is putting too much emphasis on the 'precautionary principle', too much weight on the possibility of dis-benefits, when it is the high probability that the tariffs will deliver real benefits to consumers"*.[375]

7.211 DotEcon submits that we have applied a *"very tough"* probability standard in our assessment under Principle 2, which is inconsistent with the need to promote competition. DotEcon iterates a similar argument to that which we discuss and address in the Competition effect section at paragraphs 7.145-7.48, that is, Ofcom's intervention to prevent the introduction of the NCCNs restricts TCPs' ability to compete through wholesale tariff innovation.[376]

7.212 We also address DotEcon's other views which we consider under the section Regulatory Absence at paragraphs 7.6-7.12. Specifically, DotEcon argues that to justify such an *ex ante* intervention, there should be sound reasons to expect that there would be harm if such tariff innovation were allowed and that any such harm could not be rectified *ex post*.[377] DotEcon believes a more rational approach would be to permit such tariff innovation unless there are sound and compelling reasons to expect some adverse impact, rather than because benefits cannot be proven in advance.[378]

Our views

7.213 We do not consider that we are putting too much emphasis on the precautionary principle as suggested by Professor Dobbs. Neither do we accept Professor Dobbs'

[374] Dobbs report, paragraph 15.
[375] Dobbs report, paragraph 16.
[376] DotEcon report, paragraph 116
[377] DotEcon report, paragraphs 116-117.
[378] DotEcon report, paragraph 119.

assertion that "*it is the high probability that the tariffs will deliver real benefits to consumers"*.[379]

7.214 We consider that the impact of each of the proposed NCCNs will depend on a number of key factors including the nature of retail demand for calls to the affected number ranges, the strength of the MTPE, the extent to which TCPs pass on increased termination to SPs, the extent to which callers benefit from the potential external benefits we have identified. As we have explained, we think that there is considerable uncertainty regarding the likely value of these key factors given the available evidence. We have looked at a number of scenarios that take account of the range of plausible values for these key factors in order to explore the potential impact of the proposed NCCNs.[380] Our analysis suggests that, whilst there are plausible scenarios in which the NCCNs are likely to result in benefits for callers (and SPs), there are also plausible scenarios in which there is a risk of material harm to callers.

7.215 BT appears to consider that those scenarios in which there are benefits for both callers and SPs are significantly more likely than those scenarios in which there are detriments to callers, and this is reflected in the probability distributions that underpin BT's Monte Carlo simulation (see paragraphs 7.199-7.203). In our view, however, neither BT nor any of the parties have been able to provide the empirical evidence necessary to allow us to reach a robust view on the relative likelihood of alternative scenarios arising, or to evaluate the expected net welfare impact of the proposed NCCNs. In light of this, we find that we are unable to rule out scenarios in which there is a risk of material detriment to consumers under all of the NCCNs in dispute.

Weighting of the different types of consumer

Views of the parties

7.216 BT believes we should place additional weight on SPs in our assessment. Specifically, BT invites Ofcom to fully take into account the interests of SPs as consumers of the services and notes the CAT's view in its Judgment that a distinction between "human" consumers and SPs is unhelpful.[381]

7.217 DotEcon, in its report prepared for BT, argues that we have not justified why SPs receive little weight. It submits that "*SPs are just customers of the two-sided NTS platform, like callers, and there is no sound economic rationale for applying this partial weighting*".[382] DotEcon also comments that "*SPs' interests effectively stand in as a surrogate for benefits to callers through service improvements and innovations*".[383]

[379] Dobbs report, paragraph 16
[380] We note that there is also uncertainty as to whether the theoretical models used to assess the Direct effect accurately reflect the basis on which MNOs make their pricing decisions in practice. For the avoidance of doubt, the scenarios we have considered do not seek to take account of this.
[381] BT's response to our Provisional Conclusions, page 3.
[382] DotEcon report, paragraph 125.
[383] DotEcon report, paragraph 125.

Our views

7.218 In considering the overall effect on consumers, it is important to bear in mind that there are two distinct groups of consumers that may be impacted by the introduction of the NCCNs – (i) SPs and (ii) callers.

7.219 As discussed in Sections 3 to 6, our analysis suggests that there are likely to be benefits to SPs as a result of the introduction of the NCCNs not least because there is no risk of them suffering detriment from their introduction. By contrast, the effect of the NCCNs on callers is uncertain and we have not been able to rule out the risk that they will suffer material detriment as a result of their introduction.

7.220 In this context, we disagree with DotEcon's suggestion that *"SPs' interests effectively stand in as a surrogate for benefits to callers"*. For the reasons set out in paragraphs 3.67-3.73 of our Provisional Conclusions, we consider that it is not clear that callers will necessarily benefit from any additional revenue gained by SPs (see also paragraph 7.137-7.39).

7.221 Ofcom's overriding statutory duties are to further the interests of consumers. Where there is any conflict between its duties Ofcom is required to resolve the conflict in the manner it thinks best in the circumstances.[384]

7.222 In the Disputes, it appears from our analysis that the interests of different categories of consumer may be affected differently by the NCCNs, in that whilst the NCCNs may benefit SPs, we consider that they give rise to a risk of a material detriment to callers. Both SPs and callers are consumers for the purposes of the 2003 Act.[385] The interests of both categories of consumers are in our view relevant considerations in the Disputes.

7.223 The CoA recognised that Ofcom faced a similar tension when looking at the effect of the tiered termination rates in the 08x cases. In its Judgment the CoA reiterated that the decision as to how the relevant considerations in a dispute should be weighed in the balance against each other is for Ofcom to decide by virtue of the terms of the legislation, absent any errors of fact or law.[386] The CoA noted that the function and the duty of the regulator is to *"consider all the various factors and to assess the balance of advantages and disadvantages, whether proved, probable, likely or merely possible, to take into account the degrees of probability in each case and the respective seriousness of each, and to come to a balanced assessment overall as to what outcome would most appropriately meet the relevant regulatory objectives*".[387]

7.224 We discussed at paragraphs 3.75 and 3.76 of the Provisional Conclusions some of the reasons why, in light of our statutory duties and regulatory objectives, Ofcom has placed more weight on the interests of callers than SPs in this case. We remain of the view that this is the appropriate approach for us to adopt. We have also taken into account the fact that there is an asymmetry of risks, with callers bearing the risk of any detriment that might arise from the introduction of the NCCNs despite arguably being in the weakest bargaining position and being likely to be the least well informed about the most appropriate course of action to take.

[384] See for example section 3 (7) and section 4(11) of the 2003 Act.
[385] See the definition of consumer as set out in section 405(5) of the 2003 Act.
[386] CoA Judgment, paragraphs 35, 89 and 90.
[387] CoA Judgment, paragraph 94.

7.225 We have therefore concluded that in the circumstances of the Disputes and taking account of our overriding statutory duties, it is appropriate for us to place significantly greater weight on the material risk of detriment to callers as identified above.

Conclusion on consumer welfare analysis

7.226 The overall impact of the WTCs on consumers (SPs and callers) depends on the various interactions and the inter-relationships between the Direct effect, Indirect effect, MTPE, as well as the impact on competition.

7.227 We have been unable to identify the exact size of any of the Direct, Indirect or MTPE effects and have instead only been able to identify a range within which these effects are likely to lie. As a consequence there are a number of plausible outcomes to our assessment of the effect on consumers (SPs and callers). Our analysis indicates that in some of these scenarios there are clear benefits to SPs and callers, whereas in others there are benefits to SPs but a risk of material detriment to callers.

7.228 On the basis of the available evidence we have found that there are plausible scenarios in which the NCCNs could result in benefits to SPs and callers, and also plausible scenarios in which they could result in material harm to callers.

7.229 For the reasons set out above we consider it is appropriate for us to place greater weight on the material risk of detriment to callers that we have identified. Therefore we conclude that Principle 2 is not met given the uncertainty as to whether the charges in the Disputed NCCNs would result in a net benefit or detriment to consumers.

7.230 We would additionally note that our analysis has not taken consideration of any additional costs that might arise from implementing the tiered rates schedules set out in the Disputed NCCNs. The MNOs have been unable to quantify the size of these implementation costs (but believe that they may be significant) and have given no indication as to which services they would seek to recover these costs from. These costs may therefore lead to an additional disbenefit to some consumers.

Principle 3

7.231 We provisionally concluded that it should be practical for the tiered rates within the Disputed NCCNs to be implemented. Our position was primarily based on the findings of the *C*AT and CoA in the 08x cases, including the fact that most of the MNOs were able to agree rates with BT following the CAT Order, and our assessment that we had received no additional evidence to demonstrate that the charges in the Disputes were not reasonably practical to implement.

7.232 The MNOs disagree with our provisional view. Their arguments fall into the following two broad categories which we discuss in turn:

- those relating to the analytical framework we have used, in particular regarding who should bear the burden of proof as to whether the charges are practical to implement and the standard of proof that should apply; and
- those relating to our analysis of the evidence and submissions that they have previously supplied.

Framework for assessment

Views of the parties

7.233 EE submits that our Provisional Conclusions incorrectly analyse the CAT Judgment and CoA Judgment as regards the issue of practicality. In particular, EE argues that care should be taken in reading too much into the CAT's conclusions on practicality as the CAT's overall approach was to place the burden of proof on the MNOs to demonstrate why BT's charges were not fair and reasonable. EE claims that it is clear that this approach was taken by the CAT with regards to assessing whether the charges were reasonably practical to implement.[388]

7.234 By way of example, EE observes that whilst the CAT concluded that the potential distortion in the transit market was not a serious competitive risk, this was under the context of the CAT's more general view that BT had the contractual right to levy the charges, a view which has been overturned by the CoA.[389]

7.235 EE goes on to note that whilst the CoA did not specifically consider the issue of practicality it did place the onus on BT to justify that the charges in dispute in the 08x cases were practical to implement.[390]

7.236 EE and Vodafone also comment on the standard of proof that should be used for assessing Principle 3. EE notes that in order for the charges in dispute to be considered reasonably practical, "*it should not be sufficient merely that it is theoretically possible to implement the NCCNs; rather it should not be unduly burdensome to do so and the implementation required must be within the range of what would be reasonable.*"[391] Vodafone raises a similar point, and considers that Ofcom *"is primarily interested in what is theoretically possible*" rather than whether commercial agreement is "*likely to be realised."*[392]

7.237 Vodafone also queries whether Ofcom's approach is consistent with its approach in the 08x cases. Vodafone suggests we follow the same approach in these disputes and consider "*whether commercial agreement about the operation of the charging structure between two trading partners with very different objectives and incentives is, taking into account the commercial context and historic evidence* ***likely to be realised*** *without the consumption of considerable additional resource and expense on the part of industry stakeholders and the regulator itself*" (Vodafone's emphasis).[393]

7.238 A number of the MNOs submit that Ofcom should assess Principle 3 against the potential for the disputed charges to give rise to consumer benefit which is considered under Principle 2.[394] Vodafone believes that Ofcom's findings under Principle 2 are strengthened by the issues arising under Principle 3.[395] In addition to

[388] EE's response to our Provisional Conclusions, paragraph 61.
[389] EE's response to our Provisional Conclusions, paragraph 62.3
[390] EE's response to our Provisional Conclusions, paragraph 62.1.
[391] EE's response to our Provisional Conclusions, paragraph 48.
[392] Vodafone response to our Provisional Conclusions, paragraph 1.4
[393] Vodafone response to the Provisional Conclusions, paragraph 1.4.
[394] EE's response to our Provisional Conclusions, paragraph 50, Vodafone's response to our Provisional Conclusions, 2.4 and 2.8 and O2's response to our Provisional Conclusions, page 12.
[395] Vodafone response to our Provisional Conclusions, paragraph 2.8.

asserting that Ofcom cannot safely conclude that Principle 3 has been met, Vodafone also notes that given that Principle 2 cannot be satisfied, it is not actually necessary for Ofcom to reach a firm conclusion as to whether Principle 3 is satisfied in order to resolve the disputes.[396]

Our views

7.239 Ofcom's stance on the burden of proof is based on the CoA's ruling that it is for BT to justify these changes (see paragraphs 7.15-7.16). In the context of assessing whether the charges are reasonably practical to implement, we agree with EE that BT must go some way to demonstrate it is practical to implement the charges.

7.240 Whilst it is not clear to us the extent to which the CAT's view that the burden of proof lay with the MNOs and the weight given to BT's contractual rights influenced their views on practicality, we accept that it may have had some influence on their position and that therefore we should be cautious about giving too much weight to the conclusions that they reached on practicality.

7.241 We do not accept the MNOs' argument that we are adopting too low a standard of proof, i.e. whether something is theoretically possible rather than considering whether it would be reasonable to require the MNOs to take the steps required to implement the charges.

7.242 Vodafone appears to be suggesting that our approach is inconsistent with that which we adopted in the 08x cases. We would note in response that further submissions have been made on this subject, both in litigation and in these Disputes. It follows, therefore, that it is only natural that our thinking has developed over time. To the extent that there are any differences between the approach that we adopted to practicality in the 08x cases and that adopted in the Disputes, we consider this to be justified by the new evidence and reasoning that has developed since we considered the 08x cases.

7.243 EE, Vodafone and H3G encourage us to assess Principle 3 against the potential for the disputed charges to give rise to consumer benefit which is considered under Principle 2. We have already stated that we would do this (see paragraphs 3.108 and 3.115 of the Provisional Conclusions). There we note the weight we attach to issues arising in Principle 3 depends on our findings in relation to Principle 2. This approach is consistent with that which we adopted in the 0845/70 Determination. We also note Vodafone's view that it is not actually necessary for Ofcom to reach a firm conclusion as to whether Principle 3 is satisfied in order to resolve the Disputes (in the scenario that Principle 2 is not met).

Evidence regarding practicality

Views of the parties

7.244 The MNOs believe that the evidence available demonstrates that it is not practical to implement the Disputed NCCNs. They make a number of points, which can be divided into four broad categories. We summarise these below before discussing our views on them.

[396] Vodafone response to our Provisional Conclusions, paragraph 2.10.

Implementation costs and time

7.245 EE argues that Ofcom should not find that it is practical to implement the Disputed NCCNs if they require customers to invest significantly in new systems or staff time or if they require intervention by dispute resolution bodies before implementation details can be agreed.[397]

7.246 EE considers that Ofcom has failed to take account of issues including the large number of systems required[398] and the investment in IT systems which would be required for implementation of the charges.[399] EE also believes that the short life of any investments in new systems as a result of the implementation of the NGCS review should be taken into account.[400]

7.247 EE further submits that the extensive intervention of various dispute resolution bodies in the 08x cases is evidence that the disputed charges are not practical to implement.[401] To support this, EE provides details of the internal resource which was required to implement the CAT Order including [✂][402]

7.248 EE additionally notes that the implementation of the charges in dispute would require the sharing of commercially confidential data from MNVOs.[403]

Pricing complexity

7.249 EE notes there are a number of practical issues surrounding the complexity of the charges. For example, EE is required to calculate 159 average prices per month for NCCN 1107 and 39 for NCCN 1101.[404] EE is also concerned that the charge schedules in dispute are just three of a number that BT may wish to introduce.

7.250 EE believes that the situation is further complicated by the fact that other TCPs have implemented slightly different schedules to that which BT has introduced. This could require EE to calculate a very substantive number of average prices per month.[405] O2 also notes that some other TCPs have introduced tiered charges and that those which have done so, have amended their schemes on several occasions.[406]

7.251 Vodafone also raises issues regarding the complexity of tiered rates and considers that Ofcom misunderstood the evidence provided by it regarding the practicality of the charges. Vodafone sets out additional evidence in its submission which it considers demonstrates BT's inability to implement its charges. Vodafone makes three main points:[407]

- The charges are too complex for BT to administer correctly and maintain. Vodafone considers this is particularly true of charges to 09 numbers where [✂].

[397] EE's response to the Provisional Conclusions, paragraphs 44, 48 and 49.
[398] EE's response to the Provisional Conclusions, paragraph 55.1.
[399] EE's response to the Provisional Conclusions, paragraph 55.2.
[400] EE's response to the Provisional Conclusions, paragraph 58.
[401] EE's response to the Provisional Conclusions, paragraph 47.
[402] EE's response to the Provisional Conclusions, paragraph 57.2.
[403] EE's response to the Provisional Conclusions, paragraph 56.
[404] EE's response to the Provisional Conclusions, paragraphs 52 and 54.
[405] EE's response to the Provisional Conclusions, paragraph 59.
[406] O2's response to the Provisional Conclusions, page 3.
[407] Vodafone's response to the Provisional Conclusions, Annex 1.

Vodafone lists various of types of errors BT has made in its billing for these charges;

- A lack of transparency and notification in the application of the charges. Vodafone notes it has not been satisfactorily informed of how the charges are being applied, that it is concerned that some charges may be applied in a retrospective manner and it is not clear to which specific number ranges some of the charges apply (and there have been various anomalies as to which number ranges the charges apply); and

- The charges are *"too complex and prone to errors that they place a disproportionate burden upon Vodafone to verify the accuracy of the charges."* Vodafone notes the errors in charges to 09 number ranges as particularly erroneous noting the "*uncertainty as the extent of our potential liabilities.*"

Calculation of average retail prices

7.252 All of the MNOs disagree with the relevance that Ofcom places in the Provisional Conclusions on the fact that most of the MNOs were able to agree the amounts payable to BT following the CAT Order.

7.253 H3G believes "*Ofcom places undue relevance on the CAT Order.*"[408] H3G considers that the fact that some MNOs were able to agree amounts payable under the CAT Order (an Order which was subsequently set-aside) does not amount to evidence as to the practicality of the charges on a routine basis, and in agreeing amounts under the CAT Order, no agreement was made between the parties as to how average retail prices will be calculated.

7.254 O2 notes three points regarding Ofcom's consideration of the agreement reached between many MNOs and BT following the CAT Order. First, the circumstances around the CAT Order were unique, so there is little to take from this. Second, BT did not agree with the average retail price calculations pursuant to the CAT Order. Third, the fact that not all the MNOs (Vodafone) were able to agree amounts owed under the CAT Order is an indicator of the practical issues faced.[409]

7.255 EE notes that [✂].[410]

7.256 Vodafone highlights that its experience with BT in the 08x cases and in particular the CAT Order bears out the concerns which it had highlighted previously. Vodafone emphasises the fact BT did not accept its calculations of the average retail price (and that BT tried to increase volumes) which ultimately led to the rejection of Vodafone's repayment to BT and BT's ongoing appeal of Ofcom's Re-Determination on this topic.[411]

Risk of distortion in the transit market

7.257 EE observes that whilst the CAT concluded that the potential distortion in the transit market was not a serious competitive risk, this was in the context of the CAT's more

[408] H3G's response to the Provisional Conclusions, page 3.
[409] O2's response to the Provisional Conclusions, page 9.
[410] EE's response to the Provisional Conclusions, paragraph 57.3.
[411] Vodafone's response to the Provisional Conclusions, paragraphs 2.4 and 2.5.

general view that BT had the contractual right to levy the charges, a view which has been overturned by the CoA. EE therefore consider the 0845/70 Determination and Ofcom's view that there is a potential distortion in the transit market as the valid basis upon which it should proceed in its resolution of the disputes.

7.258 DotEcon submits, in its report prepared for BT, that any issues regarding the potential distortion in the transit market are a practical rather than a competitive issue.[412] DotEcon states that whilst Principle 3 was a significant concern in the 08x Determinations, the CAT found that it should not be a major concern.[413]

Our views

Implementation costs and time

7.259 We disagree with EE's contention that charges which require customers to invest in new systems or which require staff time to implement should automatically be considered to be impractical to implement. Whilst we accept it may not be common for customers to invest significantly in new systems, it does not appear appropriate for us to rule out circumstances where this indeed might be appropriate.

7.260 Clearly, however, the costs associated with implementation of the charges are relevant to our overall assessment of whether the charges are fair and reasonable. We consider that such costs should be considered as part of Principle 2 as they reflect a potential costs to consumers that should be considered as part of our welfare assessment (see paragraph 7.230). We note however, that parties have not provided us with any quantitative information to indicate the magnitude of such costs. As noted at paragraph 6.85 of the Provisional Conclusions in the context of the NCCN 1046 Dispute, [✂]

7.261 We note the resource required by EE following the CAT Order does not appear insubstantial. It is not clear however, as to whether or not this resource requirement was a one-off which was incurred pursuant to the CAT Order, which may not be indicative of what resourcing may be required on an ongoing basis. If the implementation of the charges in dispute is typical, we would expect there to be an initial one-off investment which would reduce the resourcing that would be required on an ongoing basis.

7.262 We also note EE's point that any systems put in place to facilitate the implementation of the Disputed NCCNs may only be in place for a relatively short amount of time given the proposals arising from the ongoing NGCS review. Depending on the eventual outcome, the NGCS review could have implications for the longer term industry arrangements. With regards to investment in the IT systems for the charges in dispute, the length of time a new system will be in place will affect the underlying business case for any such investments and will have to be factored into any analysis.

7.263 We disagree with EE's suggestion that in order to be reasonably practical to implement, the charges in dispute should not require intervention by dispute resolution bodies. Ofcom's dispute resolution powers in the 2003 Act are specifically

[412] DotEcon report, paragraph 38.
[413] DotEcon report, paragraph 18.

designed to deal with situations where parties are unable to reach agreement on the pricing or provision of electronic communications services. It would therefore seem perverse to conclude that the terms and conditions of a service should be considered not to be fair and reasonable when resolving a dispute, simply because they have been referred as a dispute. The 2003 Act contains provisions that allow parties to seek recovery of the costs of bringing a dispute so we do not consider that it is appropriate for us to factor such costs into our consideration of whether the charges are reasonably practical to implement.

7.264 Turning to EE's point that the implementation of the charges in dispute would require the sharing of data from MNVOs which is commercially confidential.[414] We have not received sufficient information from the parties in order to understand the issue in enough detail to reach a definitive conclusion. We note at paragraph 3.85 of the Provisional Conclusions that calls to the affected number ranges to MNVOs account for a small proportion of total mobile-originated voice minutes such that there may be a work around for this particular issue.

Pricing complexity

7.265 EE suggests that the large number of average prices that it believes it will need to calculate each month means that it is impractical to implement the Disputed NCCNs. It is difficult at this stage to reach a firm view as to whether there is merit in EE's concerns as we are unclear on a number of issues which may affect any conclusion we reach on this matter such as the frequency of the calculation of average prices and how the calculations would be carried out. That said, a requirement to calculate around 200 average prices each month does appear to be burdensome. The question whether administering this amount of average prices is so burdensome that we should conclude that the charges are not practical to implement is something we do not have sufficient information on at this stage.

7.266 The additional evidence that Vodafone has provided to us highlights various possible issues regarding BT's implementation of the charges. However, we do not consider we have sufficient information as to whether the charges in dispute are not practical to implement on this basis.

Calculations of average price

7.267 We first address the MNOs' view that we should not seek to rely on the agreements made between the (majority of) parties pursuant to the CAT Order. We believe the agreements made pursuant to the CAT Order are relevant to our assessment of Principle 3. The charges in dispute are similar to those which were the subject of the 08x cases and were the subject of the CAT Order. Given the limited empirical evidence we have concerning how practical the charges in dispute are to implement, this is useful supplementary information. In taking account of the agreements made pursuant to the CAT Order, we recognise that the CAT Judgment, Order and Ruling have been overturned by the CoA. We also recognise that the agreements were reached as a result of the court ordering them to do so. We further recognise that the agreements were specific to the relevant period under consideration and may not have direct read across to subsequent periods. Finally, we recognise that all bar one of the MNOs were able to reach agreement under the CAT Order.

[414] EE response to the Provisional Conclusions, paragraph 56.

7.268 On a related issue, whilst we acknowledge the MNOs did not agree with BT the basis for calculating average retail prices going forward as part of agreements made pursuant to the CAT Order, our view on the calculation of average retail prices has not changed since the 08x cases. We recognise there are issues yet to be worked through as regards calculations underpinning average retail prices however we still consider that these are issues which the parties should be able to resolve and come to an agreement on. Therefore, in line with our Provisional Conclusions, we remain of the view that it should be possible for the parties in dispute to calculate an average retail price. The terms under which this may be achieved would still require an audited verification procedure which we have discussed as part of the 08x cases.

7.269 Turning to the ongoing litigation between BT and Vodafone, we understand BT did not accept information provided by Vodafone in that process which ultimately led to the parties failing to reach agreement pursuant to the CAT Order. We note the failure to reach agreement was under the terms of the CAT Order.

Risk of distortion in the transit market

7.270 Turning to EE's argument that we should adopt the position we adopted in the 0845/70 Determination regarding the potential distortion in the transit market. In our Provisional Conclusions, we noted that we have not received substantive new evidence on this issue in the context of the Disputes. As set out at paragraphs 3.79-3.81, we had previously concluded there was a potential problem associated with the choice of transit provider. We consider that this is still the case.

Final conclusion

7.271 In the Provisional Conclusions we set out our view that it should be practical to implement the Disputed NCCNs. The MNOs disagree with our position.

7.272 We have given consideration to the points they have made. Whilst as explained above, we still believe that the fact that agreements were able to be reached following the CAT Order is relevant to our assessment of whether similar charges are practical to implement, we recognise there is some merit in the points raised by the MNOs. On balance, therefore, we consider we should place less weight than we did in our Provisional Conclusions on the CAT's view in the 08x cases that it should be practical to implement tiered rates.

7.273 We have had considerable difficulty in trying to assess whether it would be practical to implement the charges set out in the Disputed NCCNs as we have been provided with little information as to how it is envisaged that the tiered rates would actually be implemented. The Disputed NCCNs only contain details of the pricing schedule that would apply, without proposing details of how they will apply. For example, it is unclear how often average charges would need to be calculated or on what basis they would be calculated (e.g. would they be calculated at the end of the month using actual data for that month or at the start of the month using some form of historical data). We also believe, however, that there may be differences between how practical the charges are to implement in the specific NCCNs in dispute. For

example, we note that there appear to be more issues concerning the implementation of NCCNs 1101 and 1107[415] than NCCN 1046.

7.274 In addition, we feel that there may be some merit to some of the concerns raised by the MNOs about the practicalities of implementing the Disputed NCCNs as there are a number of issues concerning complexity, though we have not been provided with any quantifiable evidence to allow us to reach a firm view on this.

7.275 In light of all the above we do not feel able to reach a firm conclusion as to whether the charges satisfy Principle 3. In any event, given the overall conclusions we reach in relation to Principle 2 (as set out at paragraphs 7.226-7.230), it is not necessary for us to conclude on this issue, and we therefore reach no conclusion on whether Principle 3 is satisfied.

[415] It stands that we do not feel able to reach a firm conclusions as to whether NCCN 1102 satisfies Principle 3.

Section 8

Final Conclusions and Repayments

8.1 This section summarises our final conclusions as set out in the previous section.

8.2 In light of our final conclusions that the charges in NCCNs 1101, 1107 and 1046 are not fair and reasonable, we set out our views as to whether BT should make repayments to the MNOs.

Final Conclusions

Principle 1

8.3 To satisfy Principle 1, the charges in each NCCN should not deny OCPs the opportunity to recover the efficient costs of originating calls to the affected number ranges.[416]

8.4 Our analysis in this investigation has led us to conclude that, in relation to each of NCCNs 1101, 1107 and 1046, the introduction of those NCCNs should not prevent the MNOs from recovering their efficiently incurred costs of call origination. We therefore conclude that Principle 1 is satisfied in relation to each of the three NCCNs.

Principle 2

8.5 To satisfy Principle 2, the charges in each NCCN should provide an overall benefit to consumers.

8.6 We have identified that there are two distinct groups of consumers that may be affected by the NCCNs: callers and service providiers. Having considered the Direct effect, MTPE and Indirect effects of the three NCCNs, and taking account of any effects on competition arising from the introduction of the NCCNs, we have concluded that Principle 2 is not satisfied in relation to any of the three NCCNs.

Principle 3

8.7 In Principle 3 we consider whether the charges in each NCCN are reasonably practical to implement.

8.8 We consider that there is some uncertainty as to whether it is practical to implement tiered termination rates. In light of our conclusions in relation to Principle 2, we do not consider that it is necessary for us to reach a definitive conclusion in relation to whether NCCNs 1101, 1107 or 1046 satisfy Principle 3 and therefore do not do so.

Overall conclusion

8.9 Taking into consideration our assessment across the three Principles, and in particular the fact that we find that none of the NCCNs satisfy Principle 2, we

[416] See paragraphs 3.8-3.17.

conclude that it is not fair and reasonable for BT to apply the termination charges set out in NCCNs 1101, 1107[417] or 1046.

Repayments

8.10 We have concluded that NCCNs 1101, 1107 and 1046 are not fair and reasonable. We therefore find that BT should withdraw these NCCNs and that the Parties should revert to the terms on which they were trading prior to the imposition of the NCCNs.

8.11 Section 190(2)(d) of the Act gives us the power, for the purpose of giving effect to a determination by Ofcom of the proper amount of charge in respect of which amounts have been paid by one of the parties of the dispute to the other, to give a direction, enforceable by the party to whom the sums are to be paid, requiring the payment of sums by way of an adjustment of an underpayment or an overpayment.

8.12 In relation to NCCNs 1101 and 1107, we understand that [✂].

8.13 In relation to NCCN 1046, we understand that [✂]

8.14 We have concluded that BT's charges are not fair and reasonable. As a result Ofcom may make a determination of the proper amount of a charge in respect of which amounts have been paid by one of the parties of a dispute to the other.

8.15 In deciding whether it is appropriate to make a direction under section 190(2)(d) of the 2003 Act to require repayment of sums by one party to another, we have been guided by our duties and Community obligations under sections 3 and 4 of the Act.

8.16 We have considered carefully the incentives and regulatory signals to industry that flow from our approach to directing repayments. If we allow BT to keep any payments made under the NCCNs in the disputes, despite our determination that the charges pursuant to NCCNs are not fair and reasonable, this could incentivise BT to introduce charging arrangements in future that may not be fair and reasonable. In contrast, we consider that requiring BT to make repayments incentivises it to act fairly and reasonably in any future adjustment of its charging structures. A decision by Ofcom not to require repayments would in our view, distort these incentives by putting BT in a more favourable position through introducing charging arrangements that are not fair and reasonable than would exist if it had not done so.

8.17 We note that in the 08x cases, BT maintained that we should consider the impact of requiring the Parties to revert to their prior trading arrangements in this way, and that requiring BT to revert to its previous contractual rearrangements is an onerous requirement.

8.18 In the 0845/0870 Determination, we explained that we did not agree that we are required to assess the previous contractual arrangements between the Parties. Those previous contractual arrangements were not in dispute prior to the 0845/0870 Dispute being brought. In this regard we noted the comments of the CAT in the *TRD* core issues judgment in which it clearly set out its view that in a situation where Ofcom finds that a proposed change should be rejected, Ofcom may order the

[417] For the avoidance of doubt we also conclude that it follows that NCCN 1102 is also not fair and reasonable.

parties to continue doing business on the terms and conditions that have so far applied.[418]

8.19 We also disagreed that any requirement to revert to its previous contractual position is onerous. We explained that such a requirement can be effected simply by means of a payment of any sums which have been overpaid, and continued trading on those previous terms. We did not consider this to be an onerous requirement. We also considered such a requirement to be a proportionate means of achieving our aim, which was to ensure that BT was not in a more favourable position than it would have been had it not introduced charges which we have found not to be fair and reasonable.

8.20 We believe these same considerations are directly applicable to the Disputes.

Level of repayments and interest

8.21 In light of our assessment above, we determine that it is appropriate and proportionate for Ofcom to exercise its powers under Section 190(2)(d) of the 2003 Act to require BT to repay any additional amounts paid to it by the MNOs under NCCNs 1101, 1107 and 1046, over and above those charges applicable immediately prior to NCCNs 1101, 1007 and 1046, together with interest on these amounts at the Oftel Interest Rate. This will return BT to the position that would have prevailed prior to the introduction of NCCNs 1101, 1107 and 1046.

8.22 We consider that the Parties should resolve the amounts of repayment to be paid (plus any interest) between themselves, and we have made a Determination in respect of the Dispute in these terms. In deciding that BT should be required to pay interest on the overpayments that it has received pursuant to the NCCNs, we have considered the terms and conditions on which the MNOs purchase call termination from BT as set out in the SIA. Paragraph 13.13 of the SIA states that:

> "*If any charge (or the means of calculating that charge) for an Operator service or facility has retrospective effect (for whatever reason) then the Operator shall, as soon as reasonably practicable following publication in the Carrier Price List, adjust and recalculate the charges in respect of such service or facility using the new charge and calculate the interest for any sum overpaid or underpaid at the Oftel Interest Rate.*"

8.23 The Oftel Interest Rate is defined in Annex D to the SIA as:

> "*three eighths of one per cent (3/8%) above the London Inter Bank Offered Rate being the rate per annum of the offered quotation for sterling deposits for delivery on the due date for payment for a period of three months as displayed on page 3750 on the Telerate Service (or any other page that may replace page 3750 on that service) at or about 11 am London time on the due date of payment provided that if such a rate is not so displayed London Inter Bank Offered Rate shall mean the rate quoted by National Westminster Bank PLC to leading banks in the London interbank market at or about 11 am London time on the due date of payment for the offering of sterling deposits of a comparable amount for a period of three months. Such interest shall be calculated on a daily basis.*"

[418] See paragraph 179 of the TRD judgment, referred to above at footnote 60.

8.24 Accordingly, we consider that the SIA clearly envisages a situation such as that arising in the Disputes and provides that, where this occurs, interest will be payable on any sums overpaid or underpaid at the Oftel Interest Rate.

8.25 We therefore determine that it is appropriate for BT to be required to pay interest on any required repayments at the Oftel Interest Rate, as defined in the SIA. This is the interest rate that governs the SIA which was in place over the entire period of the Disputes.

8.26 Our Determinations are set out in Annexes 1 and 2.

Assessment of our Determination against Ofcom's statutory duties and Community requirements

8.27 We have carefully considered our powers, obligations and duties in deciding on the appropriate means of resolving the Disputes. For the reasons set out below, we consider that our Determinations of the Disputes is consistent with both Ofcom's general duties in section 3 of the 2003 Act, and (pursuant to section 4(1)(c) of the 2003 Act) the six Community requirements set out in section 4 of the 2003 Act, which give effect, amongst other things, to the requirements of Article 8 of the Framework Directive.

8.28 We consider that the following duties have particular relevance to the Disputes:

(i) the duty to further the interests of citizens (i.e. all members of the public in the United Kingdom) in relation to communications matters (section 3(1)(a));

(ii) the duty to further the interests of consumers in the relevant markets, where appropriate by promoting competition (section 3(1)(b));

(iii) the duty to have regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed; as well as any other principles appearing to Ofcom to represent the best regulatory practice (section 3(3));

(iv) the duty to have regard to the desirability of promoting competition in relevant markets (section 3(4)(b));

(v) the duty to have regard to the desirability of encouraging investment and innovation in the relevant markets (section 3(4)(d));

(vi) the duty to have regard to the opinions of consumers in relevant markets and of members of the public generally (section 3(4)(k));

(vii) the duty to have regard to the extent to which, the furthering or securing of our functions is reasonably practicable (section 3(4)(m));

(viii) the duty to have regard, in particular, to the interests of consumers in respect of choice, price, quality of service and value for money (section 3(5));

(ix) the duty to promote competition (section 4(3));

(x) the duty to secure that Ofcom's activities contribute to the development of the European internal market (section 4(4));

(xi) the duty to promote the interests of all persons who are citizens of the European Union (section 4(5));

(xii) the duty to take account of the desirability of Ofcom's carrying out their functions in a manner which, so far as practicable, does not favour one form of electronic communications network, electronic communications service or associated facility; or one means of providing or making available such a network, service or facility, over another; and

(xiii) the duty to encourage, to the extent Ofcom considers it appropriate, the provision of network access and service interoperability for the purpose of securing efficiency and sustainable competition, efficient investment and innovation and the maximum benefit for the customers of communications network and services providers (sections 4(7) and 4(8)).

8.29 We consider the duties set out at (i), (ii), (viii) and (x) are of particular relevance to resolving the Disputes, i.e. the interests of citizens and consumers. This is because the issues raised could have an impact on the cost of communications services to consumers.

8.30 We consider that the duties set out at (ii), (iv) and (xiii) are of particular relevance for resolving the Disputes since we consider that the issues raised could have an impact on competition and, therefore, on the offer of electronic communications services to consumers in terms of choice, price, quality of service and value for money.

8.31 Charges imposed should not undermine the pressure for effective competition (whether competition between those already in the market place or competition via entry by efficient operators). This was of particular relevance to our consideration of Principle 2 in the analysis.

8.32 We consider that the duty set out at (xiii) is of further relevance for resolving the Disputes since the Disputes concern the charges for the service of call termination, which is essential for encouraging interoperability between different networks, so that customers of one network can call, and receive calls from, the customers of other networks.

8.33 We consider that the duty set out at (v) is also of relevance for resolving the Disputes since we consider that the issues raised could have an impact on the desirability of encouraging investment and innovation in relevant markets.

8.34 We consider that the duty set out at (vi) is of relevance for resolving the Disputes since we consider that the issues raised could have an impact on consumers in the relevant market and of members of the public more generally.

8.35 We consider that the duty set out at (xii) is relevant for resolving the Disputes since we need to ensure that we are not favouring one form of electronic communications service or facility, or one means of providing or making available such a network, service or facility over another.

8.36 We have considered the need for any charging or payment arrangements to be reasonably practicable to implement given our duty set out at (vii) above and

following the submissions made by the Parties. This was of particular relevance to our consideration of Principle 3 in our analysis.

8.37 Further, given that the service of call termination facilitates the development of communications between customers of different networks, we consider the duty set out at (x) is relevant, the development of the European internal market.

8.38 Finally, we consider our duties set out at (iii) and in section 3(3) of the 2003 Act to be relevant, namely to have regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed, as well as any other principles appearing to us to represent the best regulatory practice. In particular:

(i) Transparency and Accountability: we consider that this document clearly sets out the respondents' arguments and our reasoning that underpins our conclusions, and we note that the Parties and interested parties have also been invited to make representations on our Provisional Conclusions, have made submissions and responded to requests for information. We have considered all of this information and submissions in deciding how to resolve the Disputes. The details of the Disputes have also been published on the CCEB.

(ii) Proportionate: We consider that our proposal is proportionate because it is limited to the issues identified in the scope of the Disputes and to the greatest extent possible, it furthers the desirable effects we have identified and avoids the undesirable effects, making the appropriate trade-offs where necessary. The Determination also seeks to place the Parties in the same position that they would have been in if the NCCNs had not been introduced. Having had regard to the likely consequences of requiring the Parties to return to this position, we do not think that this imposes an unduly onerous requirement on any of them. As such, we consider it is a proportionate requirement to impose.

(iii) Consistency: in developing our approach, we have considered our previous approach in particular the 08x cases.

(iv) Targeted: Our resolution is targeted in that it resolves the Disputes as between the Parties to the Disputes.

Annex 1

Determination to resolve the disputes regarding NCCN 1046

Dispute between BT and each of EE, O2, H3G and Vodafone

Determination under sections 188 and 190 of the Communications Act 2003 ("2003 Act") for resolving a dispute between British Telecommunications plc ("BT") and each of Everything Everywhere ("EE"), Telefonica UK Limited ("O2"), Hutchinson 3G UK Limited ("Three"), Vodafone Group Services Limited ("Vodafone") (together the "Parties") about BT's wholesale termination charges for 080 numbers contained in NCCN 1046

WHEREAS—

(A) section 188(2) of the 2003 Act provides that, where Ofcom has decided pursuant to section 186(2) of the 2003 Act that it is appropriate for it to handle the dispute, Ofcom must consider the dispute and make a determination for resolving it. The determination that Ofcom makes for resolving the dispute must be notified to the Parties in accordance with section 188(7) of the 2003 Act, together with a full statement of the reasons on which the Determination is based, and publish so much of its Determination as (having regard, in particular, to the need to preserve commercial confidentiality) they consider appropriate to publish for bringing it to the attention of the members of the public, including to the extent that Ofcom considers pursuant to section 393(2)(a) of the 2003 Act that any such disclosure is made for the purpose of facilitating the carrying out by Ofcom of any of its functions.

(B) section 190 of the 2003 Act sets out the scope of Ofcom's powers in resolving a dispute which may, in accordance with section 190(2) of the 2003 Act, include—

(i) making a declaration setting out the rights and obligations of the Parties to the dispute;

(ii) giving a direction fixing the terms or conditions of transactions between the Parties to the dispute;

(iii) giving a direction imposing an obligation, enforceable by the Parties to the dispute, to enter into a transaction between themselves on the terms and conditions fixed by Ofcom; and

(iv) for the purpose of giving effect to a determination by Ofcom of the proper amount of a charge in respect of which amounts have been paid by one of the Parties to the dispute to the other, giving a direction, enforceable by the party to whom sums are to be paid, requiring the payment of sums by way of adjustment of an underpayment or overpayment.

(C) on 03 March 2010, BT notified the industry of NCCN 1007 which made amendments to the wholesale termination charges of NCCN 956 (NCCN 956 has subsequently been set aside. NCCN 1007 therefore replaces NCCN 911).

(**D**) on 23 August 2010, BT notified the industry of NCCN 1046 which made amendments to the wholesale termination charges of NCCN 1007, with effect from 25 August 2010.

(E) on 17 August 2010, EE submitted a dispute with BT to Ofcom for resolution.

(F) on 10 September 2010, Ofcom decided that it was appropriate for it to handle the dispute, and informed BT and EE of this decision

(G) on 14 September 2010, Ofcom published details of the dispute on its website and invited commends from stakeholders on the scope of the dispute.

(H) on 23 September, 8 and 25 October 2010, further dispute submissions were received from each of O2, Vodafone and H3G respectively, all of which related to BT's termination charges in NCCN 1007 (as corrected by NCCN 1046).

(I) on 28 September, 14 October and 28 October 2010, Ofcom decided that it was appropriate for it to handle these disputes. We considered that the principal issues raised by O2, Vodafone and H3G were the same as the issues raised by EE and therefore considered it appropriate to join O2, Vodafone and H3G to the existing dispute between EE and BT. Ofcom published details of this decision on its website.

(J) Ofcom set the scope of the dispute to be resolved as to determine whether it is fair and reasonable for BT to apply new termination charges for calls to 080 numbers hosted on its network, which are based on the level of the retail charge made by OCPs for calls to these numbers, as specifically set out in NCCN 1007 (as corrected by NCCN 1046).

NOW, therefore, Ofcom makes, for the reasons set out in the accompanying explanatory statement, this Determination for resolving this dispute—

I Declaration of rights and obligations, etc.

1 It is hereby declared that:

(a) The Parties should revert to the trading conditions that applied before NCCN 1046;

(b) BT should make payments to the MNOs by way of an adjustment for overpayments (to the extent that any payments have been made) together with interest (determined in accordance with the Agreement) made following the introduction of NCCN 1046 until the date of this Determination; and

(c) The level of repayment plus interest is to be agreed between BT and each of the MNOs.

II Binding nature and effective date

2 This Determination is binding on BT, EE, O2, H3G, and Vodafone;

3 This Determination shall take effect on the day it is published.

III Interpretation

4 For the purpose of interpreting this Determination—

a) headings and titles shall be disregarded; and

b) the Interpretation Act 1978 shall apply as if this Determination were an Act of Parliament.

5 In this Determination—

a) "2003 Act" means the Communications Act 2003 (c.21);

b) "Agreement" means the BT Standard Interconnect Agreement that each of the 2G/3G MNOs entered into with BT;

c) "BT" means British Telecommunications plc (BT) whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by Section 1159 of the Companies Act 2006;

d) "Everything Everywhere" means Everything Everywhere Limited whose registered company number is 02382161, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by Section 1159 of the Companies Act 2006;

e) "H3G" means Hutchison 3G UK Limited whose registered company number is 03885486, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by Section 1159 of the Companies Act 2006;

f) "NCCN 1007" means Network Charge Control Notice 1007 issued by BT on 03 March 2010;

g) "NCCN 1046" means Network Charge Control Notice 1046 issued by BT on 25 August 2010;

h) "O2" means Telefónica O2 UK Limited (O2) whose registered company number is 1743099, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by Section 1159 of the Companies Act 2006;

i) "Ofcom" means the Office of Communications;

j) "Parties" means BT, O2, Everything Everywhere, Vodafone and H3G; and

k) "Vodafone" means Vodafone Group Services Limited (Vodafone) is a wholly whose registered company number is whose registered company number is 3802001, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985, as amended by the Companies Act 1989.

Neil Buckley

Director of Investigations

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

4 April 2013

Annex 2

Determination to resolve the disputes regarding NCCNs 1101 and 1107

Dispute between BT and EE

Determination under sections 188 and 190 of the Communications Act 2003 ("2003 Act") for resolving a dispute between British Telecommunications plc ("BT") and Everything Everywhere ("EE") about BT's wholesale termination charges for 0843/4, 0871/2/3 and 09 numbers contained in NCCNs 1101 and 1107

WHEREAS—

(A) section 188(2) of the 2003 Act provides that, where Ofcom has decided pursuant to section 186(2) of the 2003 Act that it is appropriate for it to handle the dispute, Ofcom must consider the dispute and make a determination for resolving it. The determination that Ofcom makes for resolving the dispute must be notified to the Parties in accordance with section 188(7) of the 2003 Act, together with a full statement of the reasons on which the Determination is based, and publish so much of its Determination as (having regard, in particular, to the need to preserve commercial confidentiality) they consider appropriate to publish for bringing it to the attention of the members of the public, including to the extent that Ofcom considers pursuant to section 393(2)(a) of the 2003 Act that any such disclosure is made for the purpose of facilitating the carrying out by Ofcom of any of its functions.

(B) section 190 of the 2003 Act sets out the scope of Ofcom's powers in resolving a dispute which may, in accordance with section 190(2) of the 2003 Act, include—

(i) making a declaration setting out the rights and obligations of the Parties to the dispute;

(ii) giving a direction fixing the terms or conditions of transactions between the Parties to the dispute;

(iii) giving a direction imposing an obligation, enforceable by the Parties to the dispute, to enter into a transaction between themselves on the terms and conditions fixed by Ofcom; and

(iv) for the purpose of giving effect to a determination by Ofcom of the proper amount of a charge in respect of which amounts have been paid by one of the Parties to the dispute to the other, giving a direction, enforceable by the party to whom sums are to be paid, requiring the payment of sums by way of adjustment of an underpayment or overpayment.

(C) on 02 September 2011, BT notified the industry of NCCN 1101, which made changes to the wholesale termination charges that relate to the 0843/4 and 0871/2/3 number ranges, with effect from 1 October 2011.

(**D**) on 03 October 2011, BT notified the industry of NCCN 1102, which made changes to the wholesale termination charges that relate to the 09 number ranges, with effect from 1 November 2011 .

(E) on 26 October 2011, BT notified the industry of NCCN 1107, which superseded NCCN 1102 and specified wholesale tariff schedules covering the same charge bands as NCCN 1102, with effect from 1 December 2011.

(F) on 14 March 2012, EE submitted a dispute with BT to Ofcom for resolution.

(G) on 04 April 2012, Ofcom decided that it was appropriate for it to handle the dispute, and informed BT and EE of this decision.

(H) Ofcom set the scope of the dispute to be resolved as to determine whether it is fair and reasonable for BT to apply termination charges for calls to 0844/3 and 0871/2/3 number ranges, specifically set out in NCCN 1101, and the 09 number range, specifically set out in NCCN 1107, hosted on its network, which are based on the level of the retail charge imposed by OCPs for calls to these numbers.

NOW, therefore, Ofcom makes, for the reasons set out in the accompanying explanatory statement, this Determination for resolving this dispute—

I Declaration of rights and obligations, etc.

1 It is hereby declared that;

(a) The Parties should revert to the trading conditions that applied before NCCNs 1101 and 1107;

(b) BT should make payments to EE by way of an adjustment for overpayments (to the extent that any payments have been made) together with interest (determined in accordance with the Agreement) made following the introduction of NCCNs 1101 and 1107 until the date of this Determination; and

(c) The level of repayment plus interest is to be agreed between BT and EE.

II Binding nature and effective date

2 This Determination is binding on BT and EE;

3 This Determination shall take effect on the day it is published.

III Interpretation

4 For the purpose of interpreting this Determination—

a) headings and titles shall be disregarded; and

b) the Interpretation Act 1978 shall apply as if this Determination were an Act of Parliament.

5 In this Determination—

a) "2003 Act" means the Communications Act 2003 (c.21);

b) **"Agreement"** means the BT Standard Interconnect Agreement that each of the 2G/3G MNOs entered into with BT;

c) **"BT"** means British Telecommunications plc (BT) is a wholly whose registered company number is whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 736 of the Companies Act 1985, as amended by the Companies Act 1989;

d) **"Everything Everywhere"** means Everything Everywhere Limited whose registered company number is **02382161,** and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by Section 1159 of the Companies Act 2006;

e) **"NCCN 1101"** means Network Charge Control Notice 1101 issued by BT on 01 October 2011;

f) **"NCCN 1102"** means Network Charge Control Notice 1102 issued by BT on 03 October 2011;

g) **"NCCN 1107"** means Network Charge Control Notice 1107 issued by BT on 26 October 2011; and

h) **"Ofcom"** means the Office of Communications;

Neil Buckley

Director of Investigations

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

4 April 2013

Annex 3

Technical annex

Introduction

A3.1 This Annex sets out the methodology for our analysis of the potential direction and magnitude of the Direct effect of NCCNs 1101, 1107 and 1046.[419] It also sets out the methodology used to illustrate the impact of the NCCNs on MNOs' profits (relevant to our assessment of the MTPE[420]) and TCPs' revenues (relevant to our assessment of the Indirect effect).[421] We explain in Section 3 the role these calculations play in our overall assessment of the impact of these NCCNs on consumers, under Principle 2 of our analytical framework.

A3.2 This Annex is structured as follows:

- first, we comment on the scope of our assessment in the Disputes considered in these Provisional Conclusions;
- second, we set out the framework we have used to assess the Direct effect;
- third, we explain how we have used the results of this assessment to calculate the impact on MNOs' profits and TCPs' revenues; and
- finally, we set out the source data we have used in our analysis.

Scope of our assessment

A3.3 Our analysis of NCCNs 1101 and 1107 focuses on the impact of the wholesale termination charges under these NCCNs on EE's average retail prices for calls to 0843/4, 0871/2/3 and 09 numbers. This reflects the fact that that only EE is in dispute in relation to NCCNs 1101 and 1107 (see Section 2). The calculations we carry out in relation to NCCNs 1101 and 1107 are therefore on the basis of data provided by EE only.

A3.4 Our analysis of NCCN 1046 focuses on the impact of the wholesale termination charges under this NCCN on each MNO's average retail price for calls to 080 numbers. This reflects the fact that all of the MNOs are in dispute in relation to NCCN 1046. The calculations we carry out in relation to NCCNs 1046 are therefore on the basis of data provided by each of the MNOs.

[419] The Direct effect refers to the incentives the NCCN may create for the MNOs to alter their retail prices for calls to the affected number ranges.
[420] The MTPE refers to the effect that the NCCN could have on the price of mobile services other than calls to directly affected number ranges.
[421] The Indirect effect refers to the impact of the NCCN on SPs and, through their impact on service quality and availability, on those mobile users who make calls to the number range(s) covered by the NCCN.

Assessment of NCCN 1107

A3.5 NCCN 1107 covers a large number of charge bands (see paragraph 5.6). EE explained to us that it would be difficult to provide us with information covering all of these charge bands.[422] Given this, we considered it proportionate to conduct our analysis on only a subset of the charge bands covered by NCCN 1107 which represent the vast majority of EE's call volumes to these numbers. Specifically, we asked EE to provide information for charge bands accounting for [✂]% or more of BT terminated 09 traffic originated by the relevant operator in 2011. These charge bands represented approximately [✂]% of EE's total call volumes in the 09 number range in 2011.

A3.6 Given that the wholesale tariff schedules for the remaining charge bands are similar in terms of structure, we think it is reasonable to assume they will have similar properties to the wholesale tariff schedules for the charge bands for which we have data.

Framework for analysing the Direct effect

A3.7 Our analysis of the Direct effect is based on a version of the Dobbs 3 model put forward by BT in the 08x cases, modified to apply to the circumstance of the Disputes. This model focuses on the profits earned by an MNO from calls to the affected number ranges and seeks to identify the retail call price that would maximise MNO profits from these calls under BT's NCCNs. The magnitude and direction of the Direct effect is assessed by comparing the profit maximising retail call price predicted by the Dobbs 3 model with the existing MNO retail call price for the affected numbers.

A3.8 The profit earned by an MNO from calls to an affected number range under the proposed wholesale tariff schedule is calculated in the Dobbs 3 model as the product of the MNO's margin per minute and the volume of calls to this number range originated by the MNO:[423]

$$\pi(p) = \big(p - c - w(\hat{p})\big)q(\hat{p})$$

where:

- p is the MNO's average retail price for calls to the affected number range excluding VAT;
- $\hat{p}$ is the MNO's average retail price for the affected number range, including VAT (i.e. $\hat{p} = p(1+t)$, where t is the VAT rate);
- c is the marginal cost of origination;
- $w(\hat{p})$ is the average wholesale termination charge schedule, which is a function of the MNO's retail price including VAT under BT's NCCNs; and

[422] Meeting between Ofcom and EE, 29 May 2012.
[423] This formula ignores any fixed costs that are specific to the affected number range for ease of presentation.

- $q(\hat{p})$ is the demand for calls to the affected number range originated by the MNO, which is a function of its average retail price (including VAT). The particular relationship between an MNO's call volume and its average retail price is captured by the functional form of demand.

A3.9 In this framework, the profit maximising retail price for the relevant service following the introduction of BT's NCCNs will depend on the following key elements:

- the nature of the MNO's pricing policy for the affected number range;
- the nature of the average wholesale termination charge schedule faced by the MNO;
- the nature of the demand for calls to the affected number range originated by the MNO; and
- the marginal cost of origination.

A3.10 We discuss our approach to each of these elements below.

MNO's pricing policy

A3.11 The Dobbs 3 model developed by BT was initially designed to analyse a single stepped wholesale tariff schedule. NCCN 1046 contains only one wholesale tariff schedule as there is only one BT price point for calls to all 080 numbers (i.e. free-to-caller).[424] As noted in paragraphs 4.5 and 5.6 above, NCCN 1101 contains 39 different termination schedules and NCCN 1107 contains 159 termination schedules. These termination schedules correspond to BT's retail charge bands for the number ranges affected by these NCCNs, with variants based on the time of day for each charge band.

A3.12 As explained in Sections 4 and 5, we understand from EE that it sets a number of retail prices, each of which covers one or more BT charge bands and all times of day, partly to reflect consumer preferences for tariff simplicity and partly because of the costs to EE associated with more granular pricing. We refer to these retail prices as 'price points', to distinguish them from BT's charge bands. We understand that EE sets the level of each price point on the basis of [✂]. In order to model the Direct effect in a manner consistent with EE's retail pricing policy, we have constructed a weighted average wholesale tariff schedule for each initial retail price point set by T-Mobile and Orange in the affected number ranges, and assessed the likely direction of movement in each pricing point using the Dobbs framework described above. We explain in paragraphs A3.18-A3.21 how we construct a weighted average wholesale tariff schedule.

Average wholesale termination charge schedule

A3.13 MNOs currently set retail prices for calls to NTS numbers that do not depend on the identity of the terminating operator. In view of this pricing policy, we consider that it is

[424] Whilst the tiered termination charge schedule for calls to 080 numbers is specified by time of day, only the origination payment (applicable when the retail price is zero) differs by time of day. Otherwise, the termination charges applicable at each step are the same irrespective of the time of day.

appropriate to analyse the Direct effect on the basis of a weighted average of the wholesale termination schedules levied by different TCPs (including BT). Consequently, in applying the modified Dobbs model, we need to identify the appropriate weighted average wholesale termination charge.

A3.14 In this connection, we understand that other TCPs have already introduced tiered termination charges on all of the affected number ranges except the 09 range (see paragraphs 4.100 and 4.101) that are similar to BT's wholesale termination schedules for the relevant number range. In the case of C&W, the second largest TCP after BT in the affected number ranges, the new charges for 080 calls are identical to those set out by BT in NCCN 1046. The considerable revenues which TCPs would stand to gain from introducing identical tiered termination schedules, alongside the ease with which some TCPs appear to have been able to mimic BT's charges, means we consider it likely that the other TCPs would implement very similar, if not identical, schedules of charges if we were to find any of the NCCNs in dispute fair and reasonable.

A3.15 For these reasons, our analysis of the Direct effect is based on the assumption that all other TCPs have or will implement tiered termination charges that are identical (or at least very similar) to BT's. Under this assumption, we are able to take only BT's termination charges as the basis for the MNOs' profit maximising price (both before and after the introduction of the proposed wholesale tariff schedule) even though BT does not typically terminate anywhere near 100% of calls to number ranges affected by the proposed wholesale tariff schedule.[425]

A3.16 We note that if some TCPs do not introduce tiered termination charges, then this would dilute the impact of BT's NCCNs on MNOs' retail pricing incentives. In this case, whilst the direction of the incentive on MNOs to change price can be expected to remain the same, the magnitude of the Direct effect may be more limited compared to the situation in which all TCPs implement tiered termination charges identical or similar to BT's. We note, however, that the significance of any such dilution can be expected to depend on the proportion of NTS calls that are terminated by any TCPs who chose not to introduce tiered termination charges.

A3.17 We also note that the effect of BT's tiered termination charges on MNO's pricing decisions is more complicated if other TCPs respond by changing their termination charges in some other way dissimilar to BT's charges. It is not practicable for us to take this into account in our analysis as it involves significant additional complexity. We therefore consider that this represents a source of uncertainty regarding the robustness of our analysis with regard to the direction and magnitude of the Direct effect.

Construction of a weighted average wholesale tariff schedule

A3.18 The wholesale tariff schedules contained in NCCNs 1101, 1107 and 1046 specify a pence per minute (ppm) and/or pence per call (ppc) WTC that applies at each retail price:

[425] In its consideration of the 08x cases, the CAT observed that BT has a market share in the non-geographic call hosting market of around 25%: CAT Judgment, paragraph 149.

- **pence per minute WTC:** the WTC applies from the first minute of the call, and depends on the per minute retail price payable to the originating operator. The wholesale tariff schedule contained in NCCN 1046 specifies a ppm WTC. The same is true for most of the wholesale tariff schedules contained in NCCNs 1101 and 1107 that relate to ppm services;[426]

- **pence per call WTC:** the WTC applies to each call, and depends on the pence per call retail price payable to the originating operator. The wholesale tariff schedules contained in NCCNs 1101 and 1107 that relate to fixed fee services specify a ppc WTC;[427] and

- **pence per call and a pence per minute WTC:** the ppc WTC depends on the ppc retail price payable to the OCP.[428] The ppm WTC applies if the duration of the call exceeds one minute, and applies only to the duration which exceeds one minute. This ppm WTC depends on the ppm retail price payable to the OCP.[429] The wholesale tariff schedules for three charge bands contained in NCCN 1107 specify both a ppc and a ppm WTC that applies at each retail price. The three charge bands are p34, p35 and p36.

A3.19 With respect to this last category, the average duration of calls to the three charge bands is greater than one minute. In addition, for each charge band, the pence per call charge applicable at each step is very similar to the pence per minute charge (applicable from the second minute) on that step.[430] Therefore, we have assumed in our analysis that the pence per minute charge applies from the first minute, and have disregarded the pence per call charge, for reasons of modelling simplicity.

A3.20 In our analysis of NCCNs 1101 and 1107 we have constructed a weighted average wholesale tariff schedule for each price point in the following way. Over a wide range of retail prices,[431] we calculate a weighted average of the WTCs that apply at each and every retail price for each charge band and time of day covered by a particular price point. The WTC for each charge band and time of day is weighted by EE's call volumes to that charge band and time of day in 2011. We use either the number of minutes, or the number of calls, depending on whether the wholesale tariff schedules specify pence per minute or pence per call WTCs. The resulting weighted average wholesale tariff schedule for each price point specifies either the pence per minute or pence per call average WTC that applies at each retail price.

A3.21 In the case of NCCN 1101, the price points cover both charge bands for which the wholesale tariff schedules specify a pence per minute WTC, and charge bands for which the wholesale tariff schedules specify a pence per call WTC (see paragraph A3.18). The majority of the schedules specify a ppm price, and EE's retail prices at these price points apply on a pence per minute basis. In addition, for those charge

[426] Specifically, the charge bands: g6 to g15 (NCCN 1101); and g1, p0, p3, p5 to p26 (NCCN 1107).
[427] Specifically, the charge bands ff0 to ff2, ff6, ff11 to ff14, ff16 to ff21, ff33 to ff43.
[428] With the exception that beyond the threshold price, the pence per call WTC depends on the pence per call and/or pence per minute retail price payable to the originating operator.
[429] With the exception that beyond the threshold price, the pence per minute WTC depends on the pence per call and/or pence per minute retail price payable to the originating operator.
[430] For p34, the difference is around 0.06 pence; for p35, the difference is around 0.05 pence; and for p36, the difference is around 0.003 pence.
[431] Because there is the potential for MNOs to respond by moving up or down a number of steps on the termination ladder by adjusting retail prices (see Section 3), we need to consider a wide range of possible retail prices up to the threshold retail price in conducting our assessment of the Direct effect.

bands where the schedules specify a pence per call WTC, the average duration of calls made by EE customers is less than one minute. Therefore, we construct a weighted average wholesale tariff schedule for each price point that specifies the pence per minute weighted average WTC that applies at each retail price. To ensure that the weighted average calculation correctly reflects the average WTC per minute faced by EE, we weight the WTCs for each charge band in the following way:

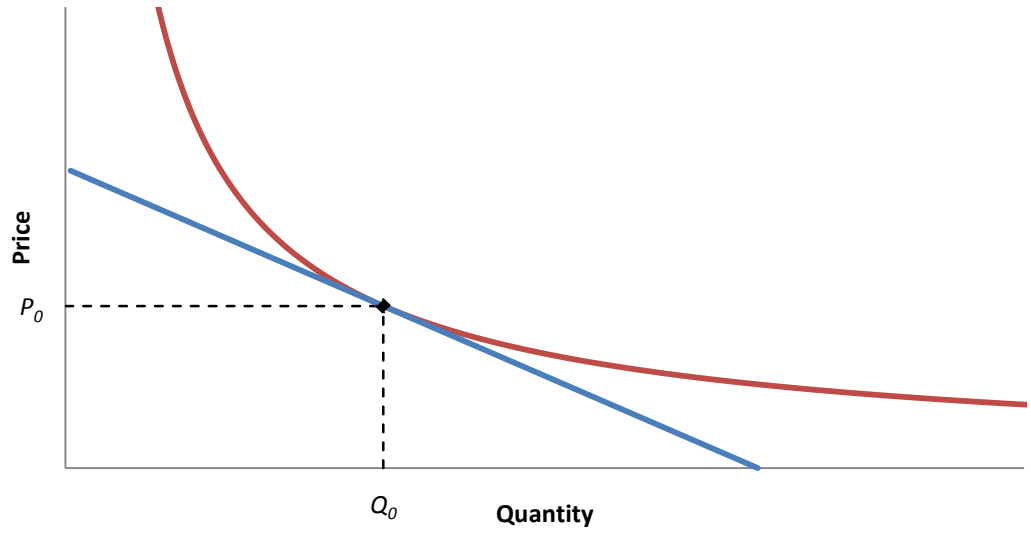
- for those charge bands where the schedules specify a pence per minute WTC, we weight the WTC using the number of minutes; and
- for those charge bands where the schedules specify a pence per call WTC, we weight the WTC using the number of calls.

Demand scenarios considered

A3.22 For the purpose of our analysis we have considered demand scenarios based on the assumption that the demand for calls to the affected number ranges originated by an MNO is either linear or constant elasticity in form. These two forms of demand are commonly used by economists and were explored in the analysis of the Direct effect in the 0845/0870 Dispute.

A3.23 We have calibrated the demand curves such that the price elasticity of demand for calls to the affected number range at the initial average retail price is equal to the reciprocal of the gross margin earned by MNOs at this price.[432] These two forms of demand are illustrated in Figure A3.1.

Figure A3.1: Linear and constant elasticity demand forms



[432] If the average retail call price is p and the marginal cost is c, then the gross margin at $p = \frac{p-c}{p}$. The marginal cost in our model is given by the sum of the MNO's marginal cost of origination and the applicable termination charge prior to the introduction of BT's NCCNs. This condition, which is known as the Lerner condition, is based on the assumption that the initial average retail call price is set at a level that maximises call profits prior to the introduction of BT's NCCNs. In the context of a firm that sells multiple products, the Lerner condition applies to a particular product if the price of that product does not affect the demand for other products sold by the firm.

A3.24 As shown in Figure A3.1, the constant elasticity and linear demand forms are tangential to one another at the initial retail call price, reflecting the fact that they are both calibrated to have the same elasticity of demand at this point. The figure also highlights that the key difference between linear and constant elasticity demand is the volume response to a given change in price, which reflects the different curvature. With constant elasticity demand, a reduction in price leads to a larger increase in call volume than with linear demand. Furthermore, the difference in the implied volume increase under the two demand forms increases as larger price reductions are considered. For this reason, the incentive to reduce retail call prices under BT's NCCNs is generally significantly stronger under constant elasticity demand than under linear demand.

A3.25 Whilst the linear and constant elasticity demand forms are both commonly used in theoretical and applied economic analysis, it is uncertain whether either of these demand curves is a good approximation to the actual functional form of demand over the relevant price range, and hence whether they give a reliable guide to the likely impact of a reduction in an MNO's average retail price on call volume.[433] In this regard, we note, however, that we have not seen empirical evidence that would allow us to conclude that either of these assumed demand curves is a good approximation to the actual demand for calls over the relevant price range, or to prefer one form of demand over another.

A3.26 As noted in paragraph 3.29, we consider that there are some features of the NTS market which may limit the extent to which a reduction in retail prices for NTS calls is likely to result in an increase in call volumes (notably low price transparency and consumers' resulting lack of price awareness). Therefore, it may be the case that the demand response to a price reduction is weaker than that implied in the demand scenarios we have considered. However, we note that it is possible that the demand response may be greater over time if price transparency and consumers' price awareness improve with the passage of time.

A3.27 Given the uncertainty about the nature of the demand for calls to the affected number ranges we do not consider that it would be appropriate to rely on the precise predictions generated by our analysis of the Dobbs 3 model. However, we think our analysis can be used to help inform our assessment of the likely direction of the Direct effect.

Marginal cost scenarios considered

A3.28 For the purpose of our analysis of the Direct effect, we have assumed that the marginal cost of originating a call to an 080, 0843/4, 0871/2/3 or 09 number is 0.8ppm. This is based on our estimate of the long run incremental cost of originating an 080 mobile call, which we estimated for the purposes of our impact assessment in our NGCS review April 2012 consultation. The methodology used to calculate this was based on the methodology developed for modelling the LRIC of mobile termination by Ofcom, which the CAT subsequently considered to be an appropriate way of modelling the LRIC of MCT.

[433] Neither BT nor the MNOs have provided robust empirical evidence on the actual functional form of demand, or on the relative likelihood of possible assumed alternatives.

A3.29 For our impact assessment range in the NGCS review April 2012 consultation, we included an element of fixed and common cost recovery in addition to LRIC. In the context of the Disputes, we do not think it appropriate to include any fixed and common costs in the analysis of the Direct effect, on the basis that such costs are not directly relevant to the determination of profit maximising retail prices for calls to the affected numbers. However, we do consider the impact of the NCCNs on the MNOs' ability to recover fixed and common costs when we look at the MTPE.[434]

A3.30 Notwithstanding this, we recognise that there is a degree of uncertainty around the correct figure for the marginal cost of origination. Therefore, we have assessed an additional scenario using 2ppm as the cost of originating a mobile call to the number ranges in dispute, to illustrate the sensitivity of our results to this assumption.

Modification to definition of MNO call margin

A3.31 In the 08x cases, the Dobbs 3 model proposed by BT was based on a definition of the retail call margin in terms of the retail price including VAT. Since MNOs do not retain VAT we have refined the Dobbs 3 model to define the MNO call margin in terms of the retail price excluding VAT.

Application of general approach to linear demand scenario

A3.32 This section sets out the equations that we use in our application of the modified Dobbs 3 model in the linear demand scenario.

A3.33 An MNO's demand function for calls to the affected number range is assumed to be linear in the retail call price with the form: $q(\hat{p}) = a - b\hat{p}$. The demand function depends on the parameters *a* (the quantity intercept) and *b* (the slope), with both greater than 0. The MNO's profit function under the existing wholesale termination charge prior to the introduction of the NCCN is therefore:

$$\pi_{pre}(p) = (p - c - w_0)(a - b\hat{p}).$$

A3.34 Using the Lerner condition (see paragraph A3.23 above) the calibrated demand curve has the following relationship linking the price-intercept (a/b), the MNO's initial average retail price for calls to the affected number range (p_0), the given initial wholesale charge (w_0), the marginal cost of origination (c), and the VAT rate (t):[435]

$$\frac{a}{b} = (2p_0 - c - w_0)(1 + t).$$

A3.35 Substituting this into the MNO's profit function under the existing wholesale termination charge prior to the introduction of the NCCN gives:

$$\pi_{pre}(p_0) = b(1 + t)(p_0 - c - w_0)^2.$$

[434] To the extent that, as a result of the NCCN, the MNO is able to recover a smaller amount of fixed and common costs through its pricing of calls to the affected number range, this is captured in the impact of the NCCN on the MNO's profits, which forms the basis of our calculation of the MTPE.

[435] Using the Lerner condition and the existing retail price and volume, it is also possible to determine the values of a and b, which result in a demand curve that satisfies the Lerner condition at the existing retail price and which passes through the point defined by the initial existing retail price and call volume.

A3.36 Under the new NCCN the wholesale termination charge depends on the MNO's retail price for calls to the affected number range (inclusive of VAT), and hence the MNO's profit function is:

$$\pi_{post}(p) = (p - c - w\lceil\hat{p}\rceil)q(\hat{p}).$$

A3.37 Using the relationship above yields the following expression for the MNO's profit function under the new NCCN:

$$\pi_{post}(p) = b(1 + t)(p - c - w\lceil\hat{p}\rceil)(2p_0 - c - w_0 - p).$$

A3.38 It is convenient to define a profit index, denoted *PI*, that expresses the MNO's profit under the new NCCN relative to the profit level attained at the initial retail price prior to the introduction of the new NCCN:

$$PI_{post}(p) = \frac{\pi_{post}(p)}{\pi_{pre}(p_0)} = \frac{(p-c-w\lceil\hat{p}\rceil)(2p_0-c-w_0-p)}{(p_0-c-w_0)^2}.$$

A3.39 The predicted profit maximising average retail price for calls to the affected number range is identified as the retail price (p) that maximises the profit index, given the marginal cost of origination and the assumed demand for calls as specified above. The direction (and magnitude) of the Direct effect is then determined as the difference between the predicted profit maximising retail call price under the new tiered termination schedule and the MNO's initial average retail price (i.e. the average retail price that prevailed prior to the introduction of the new wholesale tariff schedule).

Application of general approach to constant elasticity demand scenario

A3.40 This section sets out the equations that we use in our application of the modified Dobbs 3 model in the constant elasticity demand scenario. An MNO's demand function is assumed to be of constant elasticity: $q(\hat{p}) = a\hat{p}^{-\mu}$. The parameter *a* is a constant, and μ represents the elasticity of demand in absolute terms.

A3.41 The MNO's profit function under the existing wholesale termination charge prior to the introduction of the NCCN is given by:

$$\pi_{pre}(p) = (p - c - w_0)(a\hat{p}^{-\mu}).$$

A3.42 Using the Lerner condition, the demand curve is calibrated such that $\mu = \frac{p_0}{p_0 - c - w_0}$, where p_0 is the MNO's initial average retail price for calls to the affected number range, w_0 the given initial wholesale charge, and c is the marginal cost of origination.

A3.43 Under the new NCCN the wholesale termination charge depends on the MNO's average retail price for calls to the affected number ranges (inclusive of VAT), and hence the MNO's profit function is:

$$\pi_{post}(p) = (p - c - w\lceil\hat{p}\rceil)(a\hat{p}^{-\mu}).$$

A3.44 As with the linear demand application, it is convenient to define a profit index, denoted *PI*, that expresses the MNO's profit under the new NCCN relative to the profit level attained at the initial retail price prior to the introduction of the new NCCN:

$$\mathrm{PI}_{\mathrm{post}}(\mathrm{p}) = \frac{\pi_{\mathrm{post}}(\mathrm{p})}{\pi_{\mathrm{pre}}(\mathrm{p}_0)} = \left(\frac{\mathrm{p}-\mathrm{c}-\mathrm{w}[\hat{\mathrm{p}}]}{\mathrm{p}_0-\mathrm{c}-\mathrm{w}_0}\right)\left(\frac{\mathrm{p}}{\mathrm{p}_0}\right)^{-\mu}.$$

A3.45 The predicted profit maximising average retail price for calls to the affected number range is identified as the retail price (p) that maximises the profit index, given the marginal cost of origination and the assumed demand for calls as specified above. The direction (and magnitude) of the Direct effect is then determined as the difference between the by predicted profit maximising retail call price under the new tiered termination schedule and the MNO's initial average retail price (i.e. the average retail price that prevailed prior to the introduction of the new wholesale tariff schedule).

Impact on MNOs' profits

A3.46 In paragraph 3.56, we explain that we assess the potential scale of the MTPE by considering the possible impact of BT's NCCNs on MNOs' profits from calls to the affected numbers ranges.

A3.47 We assess the impact on MNO profits from calls to the affected number ranges under each of the scenarios considered in our assessment of the Direct effect. This is because different assumptions about demand in the affected number ranges generate different post-NCCN retail prices, termination charges and call volumes, and hence imply different levels of reduction in MNO profits to be recovered through other mobile services.

A3.48 As with our analysis of the Direct effect, our calculation of the impact on MNO profits is based on the assumption that all TCPs will implement a charging structure that is the same, or very similar, to that implemented by BT in the NCCNs in dispute.

A3.49 In addition, we assess the impact on an MNO's profits from calls to the numbers covered by each of its initial retail price points separately. This is because we have assessed the Direct effect at each price point (see paragraphs A3.11 and A3.12).

A3.50 We calculate an MNO's profit from calls to the affected number ranges for each price point prior to the introduction of the relevant NCCN as follows:

$$\pi_{pre} = (p_0 - c - w_0)q_0$$

where:

- p_0 is the MNO's initial average retail price at the pricing point;
- c is the marginal cost of origination;
- w_0 is the weighted average wholesale termination charge applicable prior to the introduction of the relevant NCCN; and
- q_0 is the total volume of calls to the numbers covered by the price point originated by the MNO in 2011.

A3.51 The MNO's profit at each price point after the introduction of the relevant NCCN is calculated using the outputs from our analysis of the Direct effect by multiplying the profit index at the predicted profit maximising price by the MNO's profits prior to the introduction of the NCCN.[436] The profit index captures the impact on total profits from reductions in margin per minute and from any changes in call volumes resulting from adjustments to the retail price. [437]

A3.52 The reduction in an MNO's profit for each price point is then the difference between the MNO's profit before and after the introduction of the relevant NCCN. This is the reduction in profit after the MNO has minimised its losses by adjusting retail prices to the profit maximising price under the new NCCN. We calculate the impact of BT's NCCNs on an MNOs' profits at each price point because each operator faces a different demand curve for calls to a particular number range determined by the preferences of its own subscribers, and sets a different retail price for these calls and receives a different volume of calls on this basis.[438]

Impact on TCPs' revenues

A3.53 In paragraph 3.74, we explain that we assess the potential scale of the Indirect effect by considering the possible impact on TCP revenues from the NCCNs in dispute. As with the impact on MNOs' profits, we assess the impact of the NCCNs on TCPs' termination revenues under each of the scenarios considered in our assessment of the Direct effect. This is because different assumptions about demand in the affected number ranges generate different post-NCCN retail prices, termination charges and call volumes, and hence imply different levels of increase in TCP revenues.

A3.54 As explained in paragraphs A3.13-A3.17, our analysis of the Direct effect is based on the assumption that all TCPs will implement a charging structure that is the same, or very similar, to that implemented by BT in the NCCNs in dispute. In addition, as noted in paragraph A3.13, MNOs currently set retail prices for calls to NTS numbers that do not depend on the identity of the TCP. As a result, all TCPs will see the same, or a very similar, increase in termination charges as BT.

A3.55 We assess the impact on TCPs' revenues from calls to the numbers covered by each of the MNO's initial retail price points separately. This is because we have assessed the Direct effect at each price point (see paragraphs A3.11 and A3.12).

A3.56 We calculate total TCP revenues at each MNO price point prior to the introduction of the relevant NCCN. We do this by multiplying the weighted average termination charge by the volume of calls to the affected number range originated by the MNO(s) in 2011:

$$TCP\ revenues_{pre} = w_0 q_0$$

A3.57 TCP revenues at each price point after the introduction of the relevant NCCN are calculated using the outputs from our analysis of the Direct effect, specifically, the

[436] As a result, the calculation of the MTPE assumes that TCPs implement tiered termination charges identical (or at least very similar) to BT's. See paragraph A3.15.
[437] It is also possible to calculate the MNO's profit at each price point after the introduction of the relevant NCCN by calculating the call volume at the predicted retail price. i.e. $\pi_{post} = (p_1 - c - w_1)q_1$.
[438] For NCCN 1046, we calculate the impact for each MNO. For NCCNs 1101 and 1107, we calculate the impact for each price point set by T-Mobile and Orange in the affected number ranges.

weighted average termination charge applicable at the predicted retail price, and the implied volume of calls originated by the MNO(s) under the assumed demand for calls to the affected number range:

$$TCP\ revenues_{post} = w_1 q_1$$

A3.58 The increase in TCP revenues for each price point is then the difference between TCP revenues before and after the introduction of the relevant NCCN. This is the increase in TCP revenues after the MNO has adjusted its retail prices to the profit maximizing price under the new NCCN.

Source data

A3.59 In this sub-section, we discuss the data we have used in our analysis described above. We have used data on average retail prices and call volumes.

Average retail prices

A3.60 A key input in the assessment of the Direct effect is the average retail price for calls to the affected number ranges that prevailed prior to the introduction of the relevant NCCN. We set out below the average retail prices which we have used for our analysis.

NCCNs 1101 and 1107

A3.61 EE provided the average retail prices separately for T-Mobile and Orange for calls to the charge bands covered by NCCNs 1101 and 1107, which applied immediately before the NCCNs came into effect.[439]

A3.62 As noted above, for charge bands covered by NCCN 1107, we only asked EE to provide average retail prices where the charge band accounted for [✂]% or more of BT terminated 09 traffic originated by the relevant operator in 2011. On the basis of T-Mobile and Orange's call volumes, we asked EE to provide average retail prices for 13 charge bands for T-Mobile, and 10 charge bands for Orange. These are summarised in Table A3.1 below.

[439] EE response to Question 1 of the first s191 notice NCCN 1101 and 1107 Disputes.

Table A3.1: Average retail prices for T-Mobile and Orange calls to charge bands covered by NCCNs 1101 and 1107

NCCN	Price point	T-Mobile average retail price (incl. VAT)	Orange average retail price (incl. VAT)
NCCN 1101	All 0844 charge bands	[✂]	[✂]
	All 0871 charge bands	[✂]	[✂]
NCCN 1107	p10	[✂]	[✂]
	p7	[✂]	[✂]
	p34	[✂]	[✂]
	p16	[✂]	[✂]
	p36	[✂]	[✂]
	p8	[✂]	[✂]
	p0	[✂]	[✂]
	ff18	[✂]	[✂]
	P7 090682	[✂]	[✂]
	p5	[✂]	[✂]
	ff13	[✂]	[✂]
	ff21	[✂]	[✂]
	p3	[✂]	[✂]

Source: EE response to Question 1 of the first s191 notice NCCNs 1101 and 1107 Dispute.
* Data was not requested as the charge band accounts for less than [✂]% of BT terminated 09 traffic originated by the operator in 2011.

NCCN 1046

A3.63 In the 080 Dispute, Ofcom did not have reliable information on the MNOs' average retail prices for 080 calls, with the MNOs suggesting that calculating an average retail price would be impractical and, in any case, inaccurate.[440]

A3.64 In the context of the NCCN 1046 Dispute, we asked the MNOs to provide details of their current average retail price for calls to 080 numbers, or if this cannot be calculated, their best estimate of the average retail price charged.[441] In response:

- Vodafone did not provide an average retail rate for 080 calls. Vodafone refers to the witness statement of Steve Bowey (which was submitted by Vodafone in BT's appeal against Ofcom's Determination of 5 February 2010 of the 080 Dispute) which provides an explanation of the difficulties Vodafone would encounter in generating an average 080 retail rate and the data that is required to do so. However, Vodafone did provide a simple notional average retail rate using total 080 revenues and 080 calls volumes. Based on data available for a three month

[440] The 080 Determination, paragraph 5.163.
[441] Questions 5 and 6 first s191 notice NCCN 1046 Dispute.

period, Vodafone's average retail rate for chargeable 080 calls is [✂]ppm.[442] Vodafone also provides its best estimate of a notional average [✂] in the calculation, and estimates this to be [✂]ppm (excluding VAT);

- H3G responded by saying that it is not possible for it to calculate accurately the average retail price for 080 calls terminated by BT. However, H3G did provide estimates of the average retail price for all 0800 and 0808 calls charged by H3G (terminated on BT's and other TCPs' networks) in the month of October 2010: [✂]ppm ([✂]) excluding zero rated calls and [✂]ppm ([✂]) including zero rated calls. H3G noted that these estimates do not represent the average retail charge for 080 calls originated on H3G's network since H3G is not privy to information about the retail revenues generated from calls made by customers of H3G's MVNO and international roaming partners. In addition, [✂H3G provided a number of caveats to its estimates, which are confidential✂];

- O2 stated that [✂]; and

- EE stated that it is unable to calculate, or provide a reliable estimate of its average retail price. EE referred to the witness statement of Stephen Ornadel (which was submitted by EE in BT's appeal against Ofcom's Determination of the 080 Dispute), which explains why it is not possible to calculate an accurate average retail price.

A3.65 In light of these responses, we also asked each of the MNOs to confirm their headline retail prices for 080 calls that applied prior to the introduction of BT's tiered termination charges (i.e. November 2009).[443] We also asked the MNOs to describe any changes they had made to headline retail prices between November 2009 and the introduction of NCCN 1046 in April 2010. Based on their responses, Table A3.2 below summarises the MNOs' headline retail prices for calls to 080 numbers (excluding zero rated numbers) prior to NCCN 1046.

[442] Vodafone refers to the witness statement of Robin Stone (which was submitted by Vodafone in BT's appeal against Ofcom's Determination of 5 February 2010 of the 080 Dispute), where this figure is calculated.
[443] Question 1 of the second s191 notice NCCN 1046 Dispute and question 1 of the second s191 notice for the Disputes. In the 080 Dispute, O2 submitted information on each MNO's representative headline rates for 080 calls, as at November 2009.

Table A3.2: MNO headline retail prices for calls to 080 numbers prior to NCCN 1046

	Pay Monthly (incl. VAT)	Pay & Go (incl. VAT)	SME (excl. VAT)
O2	[✂]	[✂]	[✂]
Vodafone	[✂]	[✂]	[✂]
Orange	[✂]	[✂]	[✂]
T-Mobile	[✂][444]	[✂]	[✂]
H3G	[✂]	[✂]	[✂]

Source: O2, Vodafone and H3G's responses to Question 1 of the second s191 notice NCCN 1046 Dispute and EE's response to Question 1 of the second s191 notice for the Disputes.[445]

A3.66 Vodafone and EE also provided information on headline retail prices applicable to SME customers. Vodafone noted that it does not publish tariffs for large enterprise, meaning that average retail prices are [✂]. We note that Robin Stone, in his witness statement submitted in BT's appeal against Ofcom's Determination of the 080 Dispute, states that larger corporate customers negotiate bespoke terms ranging from [✂]-[✂]ppm.[446]

A3.67 H3G explained that some PAYG customers are charged a retail price of [✂]ppm ([✂] for calls to 080 ranges originated from H3G's network (rather than when 2G roaming), which has the effect of reducing H3G's average retail price. However, H3G did not provide information on the number of customers benefiting from this lower price.

A3.68 In relation to Vodafone's average retail price, we have more recent information provided by Vodafone in the Dispute in respect of sums payable as between BT and Vodafone under the CAT's Order.[447] In that dispute, we considered Vodafone's stated ARPs for the purposes of calculating the repayment owed to BT. We also performed our own analysis of Vodafone's information in the form of a simple cross-check calculation to derive a single weighted average ARP.[448] Table A3.3 below summarises Vodafone's stated ARPs and the cross-check ARP that we calculated. We concluded that we were satisfied that we could rely on Vodafone's figures.

[444] Reported as 10 ppm to 40 ppm in 080 Determination. EE explained that prior to May 2009, T-Mobile had a range of legacy tariffs which priced 080 calls from 10ppm-40ppm. From 5 May 2009 these were flat rated at 40ppm for PAYM customers.
[445] [✂]
[446] Paragraph 22 of the witness statement of Robin Stone.
[447] Determination to give effect to directions given under section 195(4) of the Communications Act 2003, 2 April 2012.
[448] The weighted average ARP was calculated over the period between 1 July 2009 and 5 February 2010.

Table A3.3: Vodafone's stated ARPs versus "cross-check" ARPs

	ARP for 080 calls
Maximum monthly ARP notified by Vodafone	[✂]
Minimum monthly ARP notified by Vodafone	[✂]
Weighted average ARP calculated by Ofcom	[✂]

Source: Table 1, Determination to give effect to directions given under section 195(4) of the Communications Act 2003, 2 April 2012.

A3.69 In relation to O2's average retail price, we have more recent information provided in relation to a question regarding its termination payments under NCCN 956 following the CAT Judgment (in its response to Question 4 of our second section 191 information request). This shows that between July 2009 and November 2011, O2 used average retail prices between [✂]ppm and [✂]ppm (including VAT).[449]

A3.70 For the purposes of assessing the Direct effect of NCCN 1046, we have taken the best estimate available to us as a proxy for the average retail price for each MNO (excluding zero rated calls). In light of the evidence above, we have used the following estimates:

- **Vodafone:** [✂];
- **O2:** [✂];[450]
- **H3G:** [✂]; and
- **EE:** [✂][451].

A3.71 We stress that we are not suggesting that these estimates of average retail prices are necessarily accurate. We note that all of the MNOs have expressed various concerns about the accuracy of the available information on average retail prices. We also recognise that where we have relied on headline retail prices, this is likely to overstate the average retail price.[452]

A3.72 We believe that the range of retail prices we are considering ([✂]ppm to [✂]ppm) is likely to encompass the actual range of average retail prices. As a result, our assessment of the Direct effect for each MNO captures the potential increase in

[449] O2's response to Question 4 of our second s191 information request 10 August 2012.
[450] Email from O2 to Ofcom dated 15 November 2012.
[451] [✂]
[452] Furthermore, the exclusion of headline rates for SME customers is likely to further overstate the average retail price.

termination charges faced by the MNOs under NCCN 1046, and the possible incentives they face as a result.[453]

NTS call volumes

A3.73 As explained above, we also use data on call volumes, to assess the impact of the NCCNs on MNOs' profits and TCPs' termination revenues. We set out below the data which we have used for our analysis, including any assumptions we have made.

NCCNs 1101 and 1107

A3.74 We asked EE to provide information on total call volumes (calls and minutes) in 2011 by number range, charge band, operator and time of day for all 0843/4, 0871/2/3 numbers covered by NCCN 1101. We also requested similar data for the 09 charge bands covered by NCCN 1107, where these accounted for [✂]% or more of BT terminated 09 traffic originated by the relevant operator in 2011.[454]

A3.75 In response, EE provided information on total call volumes (calls and minutes) in 2011 by number range, charge band, operator and time of day for all 0843/4 and 0871/2/3 charge bands covered by NCCN 1101.

A3.76 However, EE only provided information on BT-terminated call volumes (calls and minutes) in 2011 by number range, charge band, operator and time of day for the 09 charge bands covered by NCCN 1107. To estimate total (i.e. BT and other TCP terminated) call volumes to these charge bands, we used information on total call volumes contained in two spreadsheets provided by EE on 31 May 2012.[455] The spreadsheets contained both BT and total terminated minutes for the period May 2011 to April 2012, for most of the 09 charge bands covered by our section 191 request. For these charge bands, we calculated the BT termination share in 2011 using data for the months May 2011 to December 2011.[456] We then used these shares to calculate the total call volumes. For the charge bands that were not included in these spreadsheets, we assumed a figure for the BT termination share using the best data available, and then estimated total call volumes in the same way.[457]

A3.77 For all three number ranges (0843/4, 0871/2/3 and 09), the data provided by EE included calls made by EE's MVNO customers. However, we consider it appropriate to conduct our analysis on the basis of volumes excluding calls made by MVNO customers (as these volumes are not relevant to EE's pricing decisions). Therefore, we asked EE to provide the approximate proportion of call volumes accounted for by MVNOs, separately for T-Mobile/Orange and for each of the number ranges covered by the Disputes.[458] We applied these proportions to the call volumes originally

[453] We find that the magnitude of the Direct effect is uncertain for all of the initial retail prices that we have considered.
[454] EE's response to Question 2 of the first s191 Notice NCCN 1101 and 1107 Disputes, including clarifications.
[455] Spreadsheets entitled "09 distribution_BT Terminated.xls" and "09 distribution_all_minutes_calls.xls", provided by Chris Bowley on 31 May 2012.
[456] EE had confirmed that it was appropriate to use this data to calculate BT's share of NTS calls as a TCP for calls to these 09 charge bands. EE's response to Question 4 of the first s191 Notice NCCN 1101 and 1107 Disputes.
[457] [✂]
[458] Clarificatory questions following EE's response to the first s191 Notice NCCN 1101 and 1107 Disputes. Email to EE dated 27 June 2012.

provided to arrive at estimates of call volumes excluding calls made by EE's MVNO customers.

NCCN 1046

A3.78 We asked the MNOs to provide information on total call volumes (minutes) to 080 numbers originated on their networks in 2011, excluding MVNO volumes.[459] In response:

- **Vodafone** provided the volume of all calls to 080 numbers originated on the Vodafone network in 2011, excluding calls by MVNO customers. Vodafone explained that the figures provided did not [✂];

- **O2** provided the volume of all calls to 080 numbers originated on the O2 network in 2011, broken down by category. We exclude the following categories from the total used in our analysis: "free calls", "zero charge", and calls made by MVNO customers (GiffGaff and Tesco Mobile);

- **H3G** provided the total volume of calls to 080 numbers originated on the H3G network in 2011. [✂H3G extracted data from different wholesale and retail sources for different periods within 2011 that cannot be directly compared✂]. H3G informed us that these volumes included zero rated calls;[460] and

- **EE** provided the total volume of calls to 080 numbers originated on its network in 2011, for Orange and T-Mobile separately. EE excludes MVNO volumes. EE comments that "*for Orange post pay customers, some calls to freephone numbers are suppressed from the customer's bill, and as such would not appear in its billing records (e.g. zero rated 080 calls)*". It is unclear whether or not the remaining volumes (i.e. Orange pre-pay and T-Mobile) include zero-rated calls.

For our analysis, we use call volumes excluding both zero-rated call volumes and MVNO call volumes, where possible.

[459] Question 2 of the second s191 notice NCCN 1046 Dispute and Question 2 of the second s191 notice for the Disputes.
[460] Email from H3G to Ofcom dated 16 November 2012.

Annex 4

Results of our quantitative analysis

Introduction

A4.1 This Annex sets out the results of our quantitative analysis for NCCNs 1101, 1107 and 1046, based on our application of the methodology described in Annex 3.

A4.2 For each of BT's NCCNs we set out the following results:

- the predicted profit-maximising retail prices for calls to the affected number ranges;
- the estimated impact on MNOs' total profits made on calls to the affected number ranges; and
- the estimated increase in TCP revenues from calls to the affected number ranges.

A4.3 As explained in Annex 3, we have examined two demand scenarios (relating to linear and constant elasticity demand for calls to the affected number ranges), and we set out results for both of these. We have also set out results for a marginal cost of origination of 0.8ppm (which is Ofcom's upper estimate of the LRIC of mobile call origination), and also for the higher figure of 2ppm as a sensitivity test.

NCCN 1101

Direct effect

A4.4 [✂]. Therefore, both the direction and magnitude of the Direct effect is an empirical question, that will in general depend on the structure of the wholesale tariff schedules, the nature of demand for calls to the affected number ranges, and the way in which MNOs respond to the incentives created by tiered termination charges (see Section 3).

A4.5 Tables A4.1 to A4.4 show the predicted profit maximising prices for each price point covered by NCCN 1101, under the linear and constant elasticity demand scenarios, and for a marginal cost of origination of 0.8ppm and 2ppm.[461]

[461] For convenience, the Tables in this sub-section refer to the "0844" and "0871" number ranges only. However, our analysis covers all of the number ranges affected by NCCN 1101 (i.e. 0843/4 and 0871/2/3).

Table A4.1: Direct effect results for NCCN 1101: linear demand scenario (MCO = 0.8ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Change in WTC
0844 - T-Mobile	[✂]	[✂]	+4%	[✂]	[✂]
0844 - Orange	[✂]	[✂]	-12%	[✂]	[✂]
0871 - T-Mobile	[✂]	[✂]	-6%	[✂]	[✂]
0871 - Orange	[✂]	[✂]	+2%	[✂]	[✂]

Source: Ofcom

Table A4.2: Direct effect results for NCCN 1101: constant elasticity demand scenario (MCO = 0.8ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Change in WTC
0844 - T-Mobile	[✂]	[✂]	-10%	[✂]	[✂]
0844 - Orange	[✂]	[✂]	-12%	[✂]	[✂]
0871 - T-Mobile	[✂]	[✂]	+15%	[✂]	[✂]
0871 - Orange	[✂]	[✂]	+2%	[✂]	[✂]

Source: Ofcom

Table A4.3: Direct effect results for NCCN 1101: linear demand scenario (MCO = 2ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Increase in WTC
0844 - T-Mobile	[✂]	[✂]	+4%	[✂]	[✂]
0844 - Orange	[✂]	[✂]	-12%	[✂]	[✂]
0871 - T-Mobile	[✂]	[✂]	+15%	[✂]	[✂]
0871 - Orange	[✂]	[✂]	+2%	[✂]	[✂]

Source: Ofcom

Table A4.4: Direct effect results for NCCN 1101: constant elasticity demand scenario (MCO = 2ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Increase in WTC
0844 - T-Mobile	[✂]	[✂]	+4%	[✂]	[✂]
0844 - Orange	[✂]	[✂]	-12%	[✂]	[✂]
0871 - T-Mobile	[✂]	[✂]	+15%	[✂]	[✂]
0871 - Orange	[✂]	[✂]	+2%	[✂]	[✂]

Source: Ofcom

Notes: (i) "Step on wholesale tariff schedule" refers to the step of the wholesale tariff schedule to which the predicted price corresponds, where 1 refers to the bottom step, 2 refers to the next step, and so on. (ii) Prices and the increase in WTC are expressed in either pence per minute or pence per

call terms depending on whether the wholesale tariff schedules specify pence per minute or pence per call WTCs (see paragraphs A3.18 –A3.21).

A4.6 Our analysis indicates that the wholesale termination scheduled in NCCN 1101 may create an incentive for EE to reduce its retail prices for some calls, but also that there may be an incentive to increase some prices, depending on the nature of the demand for calls to the affected numbers. In particular our analysis suggests that:

- EE has an incentive to increase prices at the T-Mobile price points for 0844 calls in the linear demand scenario, but to decrease these prices in the constant elasticity scenario;
- EE has an incentive to reduce prices at the T-Mobile price points for 0871 calls in the linear demand scenario, but to increase these prices in the constant elasticity scenario;
- EE has an incentive to reduce prices at the Orange price point for 0844 calls in both the linear and constant elasticity demand scenarios; and
- EE has an incentive to increase prices at the Orange price point for 0871 calls in all the scenarios we have considered.

A4.7 When we assume a higher marginal cost of origination (2ppm), EE has weaker incentives to reduce price. In the linear demand scenario, we now predict a price increase at the T-Mobile price point for 0871 calls. In the constant elasticity demand scenario, we find that EE has an incentive to increase prices for all four price points.

A4.8 In all cases where we identify incentives to reduce price, these are only partial price reductions (i.e. the price corresponds to a step on the WTC ladder above the first step, and so EE would still face higher termination charges than it would prior to the introduction of the NCCN).

Impact on EE's profits

A4.9 Tables A4.5 and A4.6 show the estimated impact of NCCN 1101 on the total profits made by EE on calls to 0843/4 and 0871/2/3 numbers, based on the predicted profit-maximising price for each price point.[462] The profit impact is calculated under the linear and constant elasticity demand scenarios, and for a marginal cost of origination of 0.8ppm and 2ppm.

[462] This is the profit impact on calls to the affected number ranges after EE has adjusted retail call prices as predicted under our analysis of the Direct effect.

Table A4.5: Estimated impact on EE's profits of NCCN 1101: linear and constant elasticity demand scenarios (MCO = 0.8ppm), £ million

Price point	MNO profits before	Linear demand scenario		CES demand scenario	
		MNO profits after	Change in profits	MNO profits after	Change in profits
0844 - T-Mobile	[✂]	[✂]	[-59%]	[✂]	[-59%]
0844 – Orange	[✂]	[✂]	[-54%]	[✂]	[-52%]
0871 - T-Mobile	[✂]	[✂]	[-65%]	[✂]	[-64%]
0871 – Orange	[✂]	[✂]	[-60%]	[✂]	[-60%]
Total	[✂]	[✂]	[-59%]	[✂]	[-58%]

Source: Ofcom

Table A4.6: Estimated impact on EE's profits of NCCN 1101: linear and constant elasticity demand scenarios (MCO = 2ppm), £ million

Price point	MNO profits before	Linear demand scenario		CES demand scenario	
		MNO profits after	Change in profits	MNO profits after	Change in profits
0844 - T-Mobile	[✂]	[✂]	[-62%]	[✂]	[-62%]
0844 – Orange	[✂]	[✂]	[-71%]	[✂]	[-66%]
0871 - T-Mobile	[✂]	[✂]	[-74%]	[✂]	[-71%]
0871 – Orange	[✂]	[✂]	[-64%]	[✂]	[-64%]
Total	[✂]	[✂]	[-66%]	[✂]	[-64%]

Source: Ofcom

A4.10 These results show that the impact of NCCN 1101 on EE's profits on calls to 0843/4 and 0871/2/3 numbers is relatively insensitive to the assumptions made about demand and the marginal cost of origination. EE's total profits on calls to 0843/4 and 0871/2/3 numbers are estimated to fall by between £[✂] and £[✂] per annum. In general, the profit impact is largely a result of the increase in termination charges, rather than a reduction in retail prices. In addition, the majority of the profit impact is on 0843/4 calls, and T-Mobile 0843/4 calls in particular.

Impact on TCP revenues

A4.11 Tables A4.7 and A4.8 show the estimated increase in TCP revenues under NCCN 1101 from T-Mobile and Orange calls to 0843/4 and 0871/2/3 numbers, based on the predicted profit-maximising price for each price point and the applicable wholesale termination charge at this price. The revenue impact is calculated under the linear and constant elasticity demand scenarios, for a marginal cost of origination of 0.8ppm and 2ppm.

Table A4.7: Estimated impact on TCP revenue of NCCN 1101: linear and constant elasticity demand scenarios (MCO = 0.8ppm), £ million

Price point	TCP revenue before	Linear demand scenario		CES demand scenario	
		TCP revenue after	Change in revenues	TCP revenue after	Change in revenue
0844 - T-Mobile	[✂]	[✂]	[276%]	[✂]	[294%]
0844 – Orange	[✂]	[✂]	[88%]	[✂]	[96%]
0871 - T-Mobile	[✂]	[✂]	[69%]	[✂]	[27%]
0871 – Orange	[✂]	[✂]	[121%]	[✂]	[122%]
Total	[✂]	[✂]	[128%]	[✂]	[126%]

Source: Ofcom

Table A4.8: Estimated impact on TCP revenue of NCCN 1101: linear and constant elasticity demand scenarios (MCO = 2ppm), £ million

Price point	TCP revenue before	Linear demand scenario		CES demand scenario	
		TCP revenue after	Change in revenues	TCP revenue after	Change in revenue
0844 - T-Mobile	[✂]	[✂]	[275%]	[✂]	[259%]
0844 – Orange	[✂]	[✂]	[97%]	[✂]	[27%]
0871 - T-Mobile	[✂]	[✂]	[6%]	[✂]	[21%]
0871 – Orange	[✂]	[✂]	[121%]	[✂]	[101%]
Total	[✂]	[✂]	[119%]	[✂]	[88%]

Source: Ofcom

A4.12 TCP revenues from T-Mobile and Orange calls to 0843/4 and 0871/2/3 numbers are estimated to increase by between £[✂] and £[✂] per annum, depending on the assumptions made about demand and the marginal cost of origination. The impact on TCP revenues reflects changes in call volumes as a result of any change in retail prices, and the increase in termination charges. We note that the majority of the revenue impact on TCPs comes from 0843/4 calls.

NCCN 1107

Direct effect

A4.13 A number of EE's price points covered by NCCN 1107 are above the retail price at which the retention per minute is maximised (see paragraph 5.9). As a result, there is an unambiguous incentive on EE to reduce these prices to at least the price at which retention per minute is maximised, irrespective of the demand response. The price points for which this is the case are shown in Table A4.9 below.

Table A4.9: NCCN 1107 price points where the initial price is above the retail price at which retention per minute is maximised

Price point	Initial price (inc VAT)	Threshold price (inc VAT)
[✂]	[✂]	[✂]
[✂]	[✂]	[✂]
[✂]	[✂]	[✂]
[✂]	[✂]	[✂]
[✂]	[✂]	[✂]
[✂]	[✂]	[✂]
[✂]	[✂]	[✂]
[✂]	[✂]	[✂]
[✂]	[✂]	[✂]
[✂]	[✂]	[✂]

Source: Ofcom

A4.14 Whilst the direction of the Direct effect in relation to the price points shown in Table A4.9 above is unambiguous (i.e. downwards), the magnitude of the Direct effect is an empirical question. For the remaining price points covered by NCCN 1107, both the direction and magnitude of the Direct effect is an empirical question.

A4.15 Tables A4.10 to A4.13 below show the profit maximising prices for each price point covered by NCCN 1107, under the linear and constant elasticity demand scenarios, assuming different values for the marginal cost of origination (0.8ppm and 2ppm).

Table A4.10: Direct effect results for NCCN 1107: linear demand scenario (MCO = 0.8ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Increase in WTC
p10 - T-Mobile	[✂]	[✂]	-0%	[✂]	[✂]
p10 - Orange	[✂]	[✂]	-20%	[✂]	[✂]
p7 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
p7 - Orange	[✂]	[✂]	+3%	[✂]	[✂]
p34 - T-Mobile	[✂]	[✂]	-9%	[✂]	[✂]
p34 - Orange	[✂]	[✂]	-3%	[✂]	[✂]
p16 - T-Mobile	[✂]	[✂]	-26%	[✂]	[✂]
p16 - Orange	[✂]	[✂]	-5%	[✂]	[✂]
p36 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
p36 - Orange	[✂]	[✂]	-8%	[✂]	[✂]
p8 - T-Mobile	[✂]	[✂]	-17%	[✂]	[✂]
p8 - Orange	[✂]	[✂]	-1%	[✂]	[✂]
p0 - T-Mobile	[✂]	[✂]	-19%	[✂]	[✂]
p0 - Orange	[✂]	[✂]	-17%	[✂]	[✂]
ff18 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
ff18 - Orange	[✂]	[✂]	-13%	[✂]	[✂]
P7 090682 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
P7 090682 - Orange	[✂]	[✂]	-15%	[✂]	[✂]
p5 - T-Mobile	[✂]	[✂]	-22%	[✂]	[✂]
p5 - Orange	[✂]	[✂]	-16%	[✂]	[✂]
ff13 - T-Mobile	[✂]	[✂]	-11%	[✂]	[✂]
ff21 - T-Mobile	[✂]	[✂]	-3%	[✂]	[✂]
p3 - T-Mobile	[✂]	[✂]	-3%	[✂]	[✂]

Source: Ofcom

Table A4.11: Direct effect results for NCCN 1107: constant elasticity demand scenario (MCO = 0.8ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Increase in WTC
p10 - T-Mobile	[✂]	[✂]	-40%	[✂]	[✂]
p10 - Orange	[✂]	[✂]	-57%	[✂]	[✂]
p7 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
p7 - Orange	[✂]	[✂]	-34%	[✂]	[✂]
p34 - T-Mobile	[✂]	[✂]	-9%	[✂]	[✂]
p34 - Orange	[✂]	[✂]	-32%	[✂]	[✂]
p16 - T-Mobile	[✂]	[✂]	-26%	[✂]	[✂]
p16 - Orange	[✂]	[✂]	-44%	[✂]	[✂]
p36 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
p36 - Orange	[✂]	[✂]	-46%	[✂]	[✂]
p8 - T-Mobile	[✂]	[✂]	-17%	[✂]	[✂]
p8 - Orange	[✂]	[✂]	-1%	[✂]	[✂]
p0 - T-Mobile	[✂]	[✂]	-35%	[✂]	[✂]
p0 - Orange	[✂]	[✂]	-17%	[✂]	[✂]
ff18 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
ff18 - Orange	[✂]	[✂]	-54%	[✂]	[✂]
P7 090682 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
P7 090682 - Orange	[✂]	[✂]	-15%	[✂]	[✂]
p5 - T-Mobile	[✂]	[✂]	-22%	[✂]	[✂]
p5 - Orange	[✂]	[✂]	-16%	[✂]	[✂]
ff13 - T-Mobile	[✂]	[✂]	-11%	[✂]	[✂]
ff21 - T-Mobile	[✂]	[✂]	-3%	[✂]	[✂]
p3 - T-Mobile	[✂]	[✂]	-23%	[✂]	[✂]

Source: Ofcom

Table A4.12: Direct effect results for NCCN 1107: linear demand scenario (MCO = 2ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Increase in WTC
p10 - T-Mobile	[✂]	[✂]	-0%	[✂]	[✂]
p10 - Orange	[✂]	[✂]	-20%	[✂]	[✂]
p7 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
p7 - Orange	[✂]	[✂]	+3%	[✂]	[✂]
p34 - T-Mobile	[✂]	[✂]	-9%	[✂]	[✂]
p34 - Orange	[✂]	[✂]	-3%	[✂]	[✂]
p16 - T-Mobile	[✂]	[✂]	-26%	[✂]	[✂]
p16 - Orange	[✂]	[✂]	-5%	[✂]	[✂]
p36 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
p36 - Orange	[✂]	[✂]	-8%	[✂]	[✂]
p8 - T-Mobile	[✂]	[✂]	-17%	[✂]	[✂]
p8 - Orange	[✂]	[✂]	-1%	[✂]	[✂]
p0 - T-Mobile	[✂]	[✂]	-19%	[✂]	[✂]
p0 - Orange	[✂]	[✂]	-17%	[✂]	[✂]
ff18 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
ff18 - Orange	[✂]	[✂]	-13%	[✂]	[✂]
P7 090682 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
P7 090682 - Orange	[✂]	[✂]	-15%	[✂]	[✂]
p5 - T-Mobile	[✂]	[✂]	-22%	[✂]	[✂]
p5 - Orange	[✂]	[✂]	-16%	[✂]	[✂]
ff13 - T-Mobile	[✂]	[✂]	-11%	[✂]	[✂]
ff21 - T-Mobile	[✂]	[✂]	-3%	[✂]	[✂]
p3 - T-Mobile	[✂]	[✂]	+4%	[✂]	[✂]

Source: Ofcom

Table A4.13: Direct effect results for NCCN 1107: constant elasticity demand scenario (MCO = 2ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Increase in WTC
p10 - T-Mobile	[✂]	[✂]	-40%	[✂]	[✂]
p10 - Orange	[✂]	[✂]	-20%	[✂]	[✂]
p7 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
p7 - Orange	[✂]	[✂]	+3%	[✂]	[✂]
p34 - T-Mobile	[✂]	[✂]	-9%	[✂]	[✂]
p34 - Orange	[✂]	[✂]	-32%	[✂]	[✂]
p16 - T-Mobile	[✂]	[✂]	-26%	[✂]	[✂]
p16 - Orange	[✂]	[✂]	-44%	[✂]	[✂]
p36 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
p36 - Orange	[✂]	[✂]	-46%	[✂]	[✂]
p8 - T-Mobile	[✂]	[✂]	-17%	[✂]	[✂]
p8 - Orange	[✂]	[✂]	-1%	[✂]	[✂]
p0 - T-Mobile	[✂]	[✂]	-35%	[✂]	[✂]
p0 - Orange	[✂]	[✂]	-17%	[✂]	[✂]
ff18 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
ff18 - Orange	[✂]	[✂]	-54%	[✂]	[✂]
P7 090682 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
P7 090682 - Orange	[✂]	[✂]	-15%	[✂]	[✂]
p5 - T-Mobile	[✂]	[✂]	-22%	[✂]	[✂]
p5 - Orange	[✂]	[✂]	-16%	[✂]	[✂]
ff13 - T-Mobile	[✂]	[✂]	-11%	[✂]	[✂]
ff21 - T-Mobile	[✂]	[✂]	-3%	[✂]	[✂]
p3 - T-Mobile	[✂]	[✂]	-23%	[✂]	[✂]

Source: Ofcom

Notes: (i) "Step on wholesale tariff schedule" refers to the step of the wholesale tariff schedule to which the predicted price corresponds, where 1 refers to the bottom step, 2 refers to the next step, and so on. (ii) Prices and the increase in WTC are expressed in either pence per minute or pence per call terms depending on whether the wholesale tariff schedules specify pence per minute or pence per call WTCs (see paragraphs A3.18-A3.21).

A4.16 In summary, our analysis shows that, with a marginal cost of origination of 0.8ppm, we find that EE has incentives to reduce prices in both the linear and constant elasticity demand scenarios at all but one price point. The exception is the Orange price point for calls to 09 p7 numbers, where we find that EE has an incentive to moderately increase the price in the linear demand scenario (although there is an incentive to reduce the price in the constant elasticity demand scenario).

A4.17 When we assume a higher marginal cost of origination (2ppm), EE has a weaker incentive to reduce price. In the linear demand scenario, we find a moderate price increase at the T-Mobile price point for calls to 09 p3 numbers. In the constant elasticity demand scenario, we predict a smaller price reduction at the Orange price point for calls to 09 p10 numbers (i.e. a 20% reduction instead of 57%), as well as a moderate price increase at the Orange price point for calls to 09 p7 numbers.

A4.18 Where we identify incentives to reduce price, these range between partial price reductions (where the predicted price corresponds to a step on the WTC ladder above the first step) and full price reductions (where the price is predicted to fall to the bottom step, at which level the termination charge is the same as before NCCN 1107 was introduced). Full price reductions are more likely in the constant elasticity demand scenario, as the demand response to a reduction in price is greater relative to the linear demand scenario.

A4.19 We find that for those price points where EE's initial average retail price is above the retail price at which retention per minute is maximised, EE has an incentive to reduce some of these prices below this price, but only in the constant elasticity demand scenarios.[463] For the other price points where EE's initial average retail price is above the retail price at which retention per minute is maximised, we find that EE only has an incentive to reduce prices to the retail price at which retention per minute is maximised.

Impact on EE's profits

A4.20 Tables A4.14 and A4.15 show the estimated impact of NCCN 1107 on the total profits made by EE on 09 calls, for each price point.[464] The profit impact is calculated under the linear and constant elasticity demand scenarios, and assuming different values for the marginal cost of origination (0.8ppm and 2ppm).

[463] The price points are as follows: [✂]
[464] This is the profit impact after EE has minimised its losses by adjusting retail prices as predicted under our analysis of the Direct effect.

Table A4.14: Estimated impact on EE's profits of NCCN 1107: linear and constant elasticity demand scenarios (MCO = 0.8ppm), £ million

Price point	MNO profits before	Linear demand scenario		CES demand scenario	
		MNO profits after	Change in profits	MNO profits after	Change in profits
09 - p10 - T-Mobile	[✂]	[✂]	[-50%]	[✂]	[-37%]
09 - p10 - Orange	[✂]	[✂]	[-57%]	[✂]	[-52%]
09 - p7 - T-Mobile	[✂]	[✂]	[-67%]	[✂]	[-63%]
09 - p7 - Orange	[✂]	[✂]	[-59%]	[✂]	[-56%]
09 - p34 - T-Mobile	[✂]	[✂]	[0%]	[✂]	[0%]
09 - p34 - Orange	[✂]	[✂]	[-50%]	[✂]	[-42%]
09 - p16 - T-Mobile	[✂]	[✂]	[-44%]	[✂]	[-33%]
09 - p16 - Orange	[✂]	[✂]	[-53%]	[✂]	[-47%]
09 - p36 - T-Mobile	[✂]	[✂]	[0%]	[✂]	[0%]
09 - p36 - Orange	[✂]	[✂]	[-60%]	[✂]	[-40%]
09 - p8 - T-Mobile	[✂]	[✂]	[-63%]	[✂]	[-58%]
09 - p8 - Orange	[✂]	[✂]	[0%]	[✂]	[0%]
09 - p0 - T-Mobile	[✂]	[✂]	[-73%]	[✂]	[-65%]
09 - p0 - Orange	[✂]	[✂]	[-55%]	[✂]	[-36%]
09 - ff18 - T-Mobile	[✂]	[✂]	[-44%]	[✂]	[-22%]
09 - ff18 - Orange	[✂]	[✂]	[-55%]	[✂]	[-48%]
09 - P7 090682 - T-Mobile	[✂]	[✂]	[-67%]	[✂]	[-67%]
09 - P7 090682 - Orange	[✂]	[✂]	[-62%]	[✂]	[-62%]
09 - p5 - T-Mobile	[✂]	[✂]	[-50%]	[✂]	[-50%]
09 - p5 - Orange	[✂]	[✂]	[-58%]	[✂]	[-58%]
09 - ff13 - T-Mobile	[✂]	[✂]	[-33%]	[✂]	[0%]
09 - ff21 - T-Mobile	[✂]	[✂]	[0%]	[✂]	[0%]
09 - p3 - T-Mobile	[✂]	[✂]	[-60%]	[✂]	[-47%]
Total	[✂]	[✂]	**[-57%]**	[✂]	**[-49%]**

Source: Ofcom

Table A4.15: Estimated impact on EE's profits of NCCN 1107: linear and constant elasticity demand scenarios (MCO = 2ppm), £ million

Price point	MNO profits before	Linear demand scenario		CES demand scenario	
		MNO profits after	Change in profits	MNO profits after	Change in profits
09 - p10 - T-Mobile	[✂]	[✂]	[-53%]	[✂]	[-42%]
09 - p10 - Orange	[✂]	[✂]	[-59%]	[✂]	[-55%]
09 - p7 - T-Mobile	[✂]	[✂]	[-69%]	[✂]	[-64%]
09 - p7 - Orange	[✂]	[✂]	[-61%]	[✂]	[-61%]
09 - p34 - T-Mobile	[✂]	[✂]	[0%]	[✂]	[0%]
09 - p34 - Orange	[✂]	[✂]	[-50%]	[✂]	[-42%]
09 - p16 - T-Mobile	[✂]	[✂]	[-44%]	[✂]	[-33%]
09 - p16 - Orange	[✂]	[✂]	[-55%]	[✂]	[-55%]
09 - p36 - T-Mobile	[✂]	[✂]	[-100%]	[✂]	[0%]
09 - p36 - Orange	[✂]	[✂]	[-60%]	[✂]	[-40%]
09 - p8 - T-Mobile	[✂]	[✂]	[-63%]	[✂]	[-63%]
09 - p8 - Orange	[✂]	[✂]	[0%]	[✂]	[0%]
09 - p0 - T-Mobile	[✂]	[✂]	[-73%]	[✂]	[-69%]
09 - p0 - Orange	[✂]	[✂]	[-60%]	[✂]	[-50%]
09 - ff18 - T-Mobile	[✂]	[✂]	[-44%]	[✂]	[-22%]
09 - ff18 - Orange	[✂]	[✂]	[-55%]	[✂]	[-50%]
09 - P7 090682 - T-Mobile	[✂]	[✂]	[-67%]	[✂]	[-67%]
09 - P7 090682 - Orange	[✂]	[✂]	[-62%]	[✂]	[-62%]
09 - p5 - T-Mobile	[✂]	[✂]	[-50%]	[✂]	[-50%]
09 - p5 - Orange	[✂]	[✂]	[-58%]	[✂]	[-58%]
09 - ff13 - T-Mobile	[✂]	[✂]	[-33%]	[✂]	[-33%]
09 - ff21 - T-Mobile	[✂]	[✂]	[-20%]	[✂]	[0%]
09 - p3 - T-Mobile	[✂]	[✂]	[-62%]	[✂]	[-52%]
Total	[✂]	[✂]	**[-59%]**	[✂]	**[-53%]**

Source: Ofcom

A4.21 These results show that the impact of NCCN 1107 on EE's profits on calls to 09 numbers is relatively insensitive to the assumptions made about demand and the marginal cost of origination.[465] EE's total profits on calls to 09 numbers are estimated to fall by around £[✂] per annum. [✂] of the profit impact is on T-Mobile and Orange calls to 09 p10 and p7 numbers, and T-Mobile calls to 09 p3 numbers.[466]

Impact on SPs' revenues

A4.22 Tables A4.16 and A4.17 show the estimated increase in TCP revenues under NCCN 1107 from T-Mobile and Orange calls to 09 numbers, for each price point.[467] The

[465] The profit impact is similar when we assume a weaker demand response (i.e. around £[✂] per annum in total).
[466] We do not model the Orange price point for calls to 09 p3 numbers because these calls represent less than [✂]% of BT terminated 09 traffic originated by Orange in 2011.
[467] This is the revenue impact after EE has minimised its losses by adjusting retail prices as predicted under our analysis of the Direct effect.

revenue impact is calculated under the linear and constant elasticity demand scenarios, and assuming different values for the marginal cost of origination (0.8ppm and 2ppm).

Table A4.16: Estimated impact on TCP revenue of NCCN 1107: linear and constant elasticity demand scenarios (MCO = 0.8ppm), £ million

Price point	TCP revenue before	Linear demand scenario		CES demand scenario	
		TCP revenue after	Change in revenue	TCP revenue after	Change in revenue
09 - p10 - T-Mobile	[✂]	[✂]	[58%]	[✂]	[164%]
09 - p10 - Orange	[✂]	[✂]	[127%]	[✂]	[264%]
09 - p7 - T-Mobile	[✂]	[✂]	[109%]	[✂]	[148%]
09 - p7 - Orange	[✂]	[✂]	[32%]	[✂]	[181%]
09 - p34 - T-Mobile	[✂]	[✂]	[33%]	[✂]	[67%]
09 - p34 - Orange	[✂]	[✂]	[44%]	[✂]	[144%]
09 - p16 - T-Mobile	[✂]	[✂]	[67%]	[✂]	[113%]
09 - p16 - Orange	[✂]	[✂]	[75%]	[✂]	[200%]
09 - p36 - T-Mobile	[✂]	[✂]	[50%]	[✂]	[100%]
09 - p36 - Orange	[✂]	[✂]	[75%]	[✂]	[175%]
09 - p8 - T-Mobile	[✂]	[✂]	[85%]	[✂]	[100%]
09 - p8 - Orange	[✂]	[✂]	[7%]	[✂]	[7%]
09 - p0 - T-Mobile	[✂]	[✂]	[80%]	[✂]	[193%]
09 - p0 - Orange	[✂]	[✂]	[74%]	[✂]	[124%]
09 - ff18 - T-Mobile	[✂]	[✂]	[58%]	[✂]	[100%]
09 - ff18 - Orange	[✂]	[✂]	[113%]	[✂]	[235%]
09 - P7 090682 - T-Mobile	[✂]	[✂]	[125%]	[✂]	[150%]
09 - P7 090682 - Orange	[✂]	[✂]	[85%]	[✂]	[92%]
09 - p5 - T-Mobile	[✂]	[✂]	[50%]	[✂]	[100%]
09 - p5 - Orange	[✂]	[✂]	[100%]	[✂]	[111%]
09 - ff13 - T-Mobile	[✂]	[✂]	[55%]	[✂]	[73%]
09 - ff21 - T-Mobile	[✂]	[✂]	[28%]	[✂]	[35%]
09 - p3 - T-Mobile	[✂]	[✂]	[35%]	[✂]	[143%]
Total	[✂]	[✂]	**[62%]**	[✂]	**[157%]**

Source: Ofcom

Table A4.17: Estimated impact on TCP revenue of NCCN 1107: linear and constant elasticity demand scenarios (MCO = 2ppm), £ million

Price point	TCP revenue before	Linear demand scenario		CES demand scenario	
		TCP revenue after	Change in revenue	TCP revenue after	Change in revenue
09 - p10 - T-Mobile	[✂]	[✂]	[58%]	[✂]	[175%]
09 - p10 - Orange	[✂]	[✂]	[128%]	[✂]	[146%]
09 - p7 - T-Mobile	[✂]	[✂]	[112%]	[✂]	[152%]
09 - p7 - Orange	[✂]	[✂]	[31%]	[✂]	[32%]
09 - p34 - T-Mobile	[✂]	[✂]	[33%]	[✂]	[67%]
09 - p34 - Orange	[✂]	[✂]	[44%]	[✂]	[150%]
09 - p16 - T-Mobile	[✂]	[✂]	[67%]	[✂]	[127%]
09 - p16 - Orange	[✂]	[✂]	[75%]	[✂]	[211%]
09 - p36 - T-Mobile	[✂]	[✂]	[50%]	[✂]	[100%]
09 - p36 - Orange	[✂]	[✂]	[75%]	[✂]	[175%]
09 - p8 - T-Mobile	[✂]	[✂]	[85%]	[✂]	[100%]
09 - p8 - Orange	[✂]	[✂]	[10%]	[✂]	[10%]
09 - p0 - T-Mobile	[✂]	[✂]	[80%]	[✂]	[198%]
09 - p0 - Orange	[✂]	[✂]	[76%]	[✂]	[129%]
09 - ff18 - T-Mobile	[✂]	[✂]	[67%]	[✂]	[108%]
09 - ff18 - Orange	[✂]	[✂]	[113%]	[✂]	[243%]
09 - P7 090682 - T-Mobile	[✂]	[✂]	[125%]	[✂]	[175%]
09 - P7 090682 - Orange	[✂]	[✂]	[85%]	[✂]	[100%]
09 - p5 - T-Mobile	[✂]	[✂]	[75%]	[✂]	[100%]
09 - p5 - Orange	[✂]	[✂]	[100%]	[✂]	[111%]
09 - ff13 - T-Mobile	[✂]	[✂]	[55%]	[✂]	[82%]
09 - ff21 - T-Mobile	[✂]	[✂]	[30%]	[✂]	[37%]
09 - p3 - T-Mobile	[✂]	[✂]	[11%]	[✂]	[151%]
Total	[✂]	[✂]	**[56%]**	[✂]	**[126%]**

Source: Ofcom

A4.23 TCP revenues from T-Mobile and Orange calls to 09 numbers are estimated to increase by between £[✂] and £[✂] per annum per annum, depending on the assumptions made about demand and the marginal cost of origination. The impact on TCP revenues reflects changes in call volumes as a result of any change in retail prices, and the increase in termination charges.

NCCN 1046

Direct effect

A4.24 Tables A4.18 and A4.19 show the profit maximising prices for 080 calls for each MNO, under the linear and constant elasticity demand scenarios. The results are the same for both marginal cost of origination assumptions (0.8ppm and 2ppm).[468]

[468] [✂].

Table A4.18: Direct effect results for NCCN 1046: linear demand scenario (MCO = 0.8 or 2 ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Increase in WTC
T-Mobile	[✂]	[✂]	-65%	[✂]	[✂]
Orange	[✂]	[✂]	-31%	[✂]	[✂]
O2	[✂]	[✂]	-15%	[✂]	[✂]
Vodafone	[✂]	[✂]	-22%	[✂]	[✂]
Three	[✂]	[✂]	-31%	[✂]	[✂]

Source: Ofcom

Table A4.19: Direct effect results for NCCN 1046: constant elasticity demand scenario (MCO = 0.8 or 2 ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Increase in WTC
T-Mobile	[✂]	[✂]	-75%	[✂]	[✂]
Orange	[✂]	[✂]	-51%	[✂]	[✂]
O2	[✂]	[✂]	-40%	[✂]	[✂]
Vodafone	[✂]	[✂]	-31%	[✂]	[✂]
Three	[✂]	[✂]	-51%	[✂]	[✂]

Source: Ofcom

Notes: (i) "Step on wholesale tariff schedule" refers to the step of the wholesale tariff schedule to which the predicted price corresponds, where 1 refers to the bottom step, 2 refers to the next step, and so on. (ii) Prices and the increase in WTC are expressed in either pence per minute or pence per call terms depending on whether the wholesale tariff schedules specify pence per minute or pence per call WTCs (see paragraphs A3.18-A3.21).

A4.25 In summary, our analysis shows that in the linear demand scenario, all MNOs have an incentive to reduce prices significantly, but not to the bottom step (i.e. a partial price reduction). [✂].

A4.26 In the constant elasticity demand scenario, we find that all MNOs have an incentive to reduce prices to the bottom step (i.e. a full price reduction).

Impact on MNOs' profits

A4.27 Tables A4.20 and A4.21 show the estimated impact of NCCN 1046 on the total profits made by each MNO on 080 calls.[469] The profit impact is calculated under the linear and constant elasticity demand scenarios, and assuming different values for the marginal cost of origination (0.8ppm and 2ppm).

[469] This is the profit impact after MNOs have minimised their losses by adjusting retail prices as predicted under our analysis of the Direct effect.

Table A4.20: Estimated impact on MNOs' profits of NCCN 1046: linear and constant elasticity demand scenarios (MCO = 0.8ppm), £ million

Price point	MNO profits before	Linear demand scenario		CES demand scenario	
		MNO profits after	Change in profits	MNO profits after	Change in profits
080 - T-Mobile	[✂]	[✂]	[-53%]	[✂]	[-6%]
080 - Orange	[✂]	[✂]	[-24%]	[✂]	[-2%]
080 - O2	[✂]	[✂]	[-17%]	[✂]	[-1%]
080 - Vodafone	[✂]	[✂]	[-12%]	[✂]	[-1%]
080 - H3G	[✂]	[✂]	[-24%]	[✂]	[-2%]
Total	[✂]	[✂]	[-27%]	[✂]	[-3%]

Source: Ofcom

Table A4.21: Estimated impact on MNOs' profits of NCCN 1046: linear and constant elasticity demand scenarios (MCO = 2ppm), £ million

Price point	MNO profits before	Linear demand scenario		CES demand scenario	
		MNO profits after	Change in profits	MNO profits after	Change in profits
080 - T-Mobile	[✂]	[✂]	[-59%]	[✂]	[-17%]
080 - Orange	[✂]	[✂]	[-28%]	[✂]	[-8%]
080 - O2	[✂]	[✂]	[-20%]	[✂]	[-5%]
080 - Vodafone	[✂]	[✂]	[-15%]	[✂]	[-3%]
080 - H3G	[✂]	[✂]	[-28%]	[✂]	[-8%]
Total	[✂]	[✂]	[-32%]	[✂]	[-9%]

Source: Ofcom

A4.28 In contrast to NCCNs 1101 and 1107, the impact of NCCN 1046 on MNOs' profits on 080 calls is sensitive to the assumptions about demand and the marginal cost of origination:

- the reduction in MNOs' profits on 080 calls is significantly greater under the linear demand scenarios than under the constant elasticity demand scenarios. In the linear demand scenarios, we find that MNOs have an incentive to reduce prices, but not to the bottom step. Therefore, MNOs' profits are lower as a result of both lower retail prices and an increase in termination charges. In contrast, in the constant elasticity demand scenarios, we find that MNOs have an incentive to reduce prices all the way to the bottom step. Whilst the reduction in prices is therefore greater than under the linear demand scenarios, this is more than offset by the fact that MNOs do not face any increase in the termination charges; and

- in addition, we find that the profit impact in the constant elasticity demand scenario is significantly higher when we assume a higher marginal cost of origination (i.e. £[✂] compared to £[✂] per annum). Whilst the profit impact also increases in the linear demand scenario when we assume a higher marginal cost of origination, the increase is considerably smaller in both absolute and relative terms (i.e. £[✂] compared to £[✂] per annum). This is because the implied increase in demand in response to a price reduction is smaller in the linear demand scenario compared to the constant elasticity demand scenario.

A4.29 Overall, we find that MNOs' total profits on 080 calls are estimated to fall by between £[✂] and £[✂] per annum, depending on the assumptions about demand and the marginal cost of origination. The profit impact is greater on those MNOs which have higher average retail prices prior to the introduction of NCCN 1046 (on the basis of the estimated we have used).

Impact on TCPs' revenues

A4.30 Tables A4.22 and A4.23 show the estimated increase in TCP revenues under NCCN 1046 from 080 calls made by the MNOs' customers, for each price point.[470] The revenue impact is calculated under the linear and constant elasticity demand scenarios, and assuming different values for the marginal cost of origination (0.8ppm and 2ppm).

Table A4.22: Estimated impact on TCP revenue of NCCN 1046: linear and constant elasticity demand scenarios (MCO = 0.8ppm), £ million

Price point	TCP revenue before	Linear demand scenario		CES demand scenario	
		TCP revenue after	Change in revenues	TCP revenue after	Change in revenue
080 - T-Mobile	0.00	[✂]	[✂]	0.00	0.00
080 - Orange	0.00	[✂]	[✂]	0.00	0.00
080 - O2	0.00	[✂]	[✂]	0.00	0.00
080 - Vodafone	0.00	[✂]	[✂]	0.00	0.00
080 - H3G	0.00	[✂]	[✂]	0.00	0.00
Total	0.00	[✂]	[✂]	0.00	0.00

Source:

Table A4.23: Estimated impact on TCP revenue of NCCN 1046: linear and constant elasticity demand scenarios (MCO = 2ppm), £ million

Price point	TCP revenue before	Linear demand scenario		CES demand scenario	
		TCP revenue after	Change in revenues	TCP revenue after	Change in revenue
080 - T-Mobile	0.00	[✂]	[✂]	0.00	0.00
080 - Orange	0.00	[✂]	[✂]	0.00	0.00
080 - O2	0.00	[✂]	[✂]	0.00	0.00
080 - Vodafone	0.00	[✂]	[✂]	0.00	0.00
080 - H3G	0.00	[✂]	[✂]	0.00	0.00
Total	0.00	[✂]	[✂]	0.00	0.00

Source: Ofcom

A4.31 TCP revenues from 080 calls made by the MNOs' customers are estimated to increase by around £[✂] per annum in the linear demand scenario, irrespective of the assumed marginal cost of origination.

[470] This is the revenue impact after EE has minimised its losses by adjusting retail prices as predicted under our analysis of the Direct effect.

A4.32 In the constant elasticity demand scenario, TCP revenues are unchanged as a result of our finding that all MNOs have an incentive to reduce prices to the bottom step (i.e. a full price reduction, so the termination charge remains at zero).

Annex 5

Supplementary Technical annex

Introduction

A5.1 This technical annex supplements Annex 3 and sets out the methodology for our analysis of the potential direction and magnitude of the Direct effect of NCCNs 1101, 1107 and 1046 in scenarios in which the demand response is weaker than that implied by the modified Dobbs model which we used in our Provisional Conclusions. It also sets out the methodology used to calculate the overall welfare effect on mobile callers resulting from the Direct effect and the MTPE of the NCCNs. We explain in Section 7 the role these additional calculations play in our overall assessment of the impact of these NCCNs on consumers, under Principle 2 of our analytical framework.

A5.2 This Annex is structured as follows:

- first, we set out the framework we have used to assess the Direct effect in scenarios in which the demand response is weaker than that implied by the modified Dobbs model which we used in our Provisional Conclusions; and
- then, we set out the framework we have used to calculate the overall welfare effect of the NCCNs on consumers resulting from the Direct effect and the MTPE.

Framework for analysing the Direct effect assuming a weaker demand response

A5.3 In light of the responses to our Provisional Conclusions, we have extended our theoretical assessment to consider scenarios in which the demand response is weaker than that implied by the modified Dobbs model which we used in our Provisional Conclusions (see paragraph 7.79).

A5.4 Given our views on the Dobbs 4 framework (set out in paragraphs 7.74-7.77) and in the absence of an evidence-based explanation of how current retail prices are consistent with profit maximisation if demand is inelastic, we have adopted a simple approach to exploring how the Direct effect changes if the demand response to a reduction in call prices is more limited than that implied by the modified Dobbs 3 model.

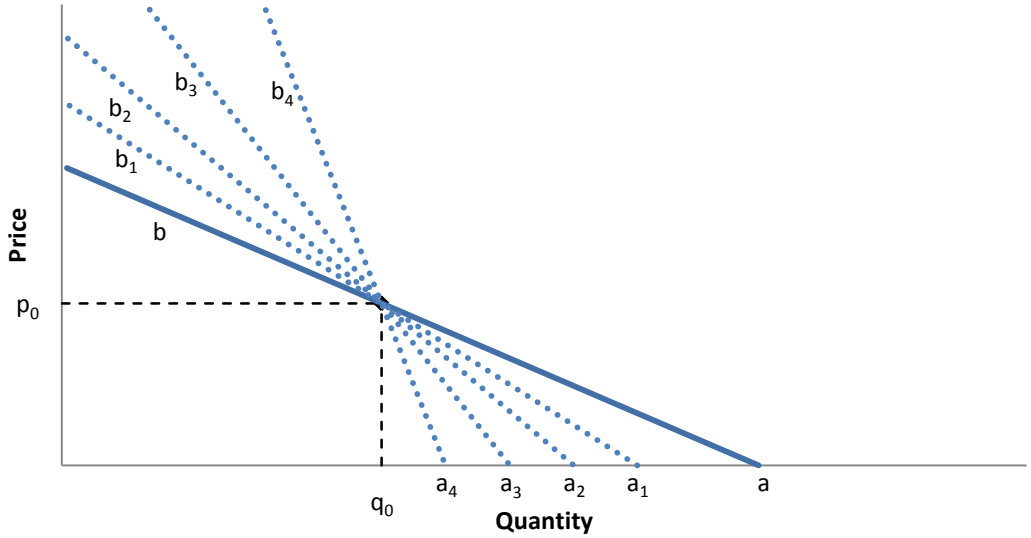
A5.5 Our approach is similar to the modified Dobbs 3 model (as described in paragraphs A3.7 to A3.21 and A3.28 to A3.31 of our Provisional Conclusions), but with the assumption that demand for calls to the affected number range originated by the MNO at the initial price and quantity is inelastic. Specifically, we consider scenarios where demand is linear, and the point elasticity of demand at the initial price and quantity is between 0.4 and 0.2 (in absolute terms). The equations that we use in these scenarios are set out below.

Application of general approach to weaker demand response scenarios

A5.6 An MNO's demand function is assumed to be of the form: $q(\hat{p}) = a - b\hat{p}$. The demand function depends on the parameters a ($t$he quantity intercept) and b (the slope), with both greater than zero.

A5.7 Given the MNO's initial average retail price (p_0) and initial volume of calls (q_0), it is possible to determine a family of demand curves which pass through this point that will result in a weaker demand response than that implied by the modified Dobbs model assuming linear demand which we used in our Provisional Conclusions. Each of these demand curves is represented by a pair of values obtained for *a* and *b*, as illustrated in Figure A5.1 below.

Figure A5.1: Linear demand forms assuming a weaker response to a change in price



A5.8 We find pairs of a and b by assuming different values for the point elasticity of demand, $\bar{\varepsilon}$, at the initial price and quantity which are lower than that implied by the Lerner condition.[471] The pair of values $\bar{a}$ and $\bar{b}$ consistent with this point elasticity at the initial price and quantity is given by the following formulae:[472]

$$\bar{b} = -\frac{\bar{\varepsilon}}{(1+t)}\frac{q_0}{p_0}$$

$$\bar{a} = q_0 + \bar{b}p_0$$

A5.9 In order to identify these demand curves, it is necessary to know the MNO's initial volume of calls to the affected number range. The data on calls volumes which we have used, including any assumptions we have made, are set out in paragraphs A3.73 to A3.78.

A5.10 Under the new NCCN the wholesale termination charge depends on the MNO's retail price for calls to the affected number range (inclusive of VAT), and hence the MNO's profit function is:[473]

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[471] I.e. $\bar{\varepsilon} < \frac{p_0}{p_0 - c - w_0}$. We have considered scenarios where the point elasticity of demand at the initial price and quantity is between 0.4 and 0.2 (in absolute terms).

[472] The formula for $\bar{b}$ is derived from the standard formula: $\frac{dq}{dp}\frac{p}{q}$, which for a linear demand curve is $-b(1+t)\frac{p}{q}$.

[473] Refer to paragraph A3.8 of the Provisional Conclusions for an explanation of the terms used in the formula.

$$\pi_{post}(p) = (p - c - w[\hat{p}])(\bar{a} - \bar{b}\hat{p})$$

A5.11 The MNO's profit maximizing price under the NCCN is given by the price which maximises the profit function, for given values of $\bar{a}$, $\bar{b}$ and the marginal cost of origination.

A5.12 As explained in 7.79, we assume for the purpose of the exercise that MNOs do not wish to increase retail call prices further in these scenarios, but may choose to reduce retail call prices.

Framework for calculating the net impact on consumer welfare

A5.13 As explained in paragraph 7.190, for the purposes of illustration, we have extended our theoretical assessment to calculate the overall welfare effect of the NCCNs on mobile callers (both those who make mobile calls to the affected number ranges and mobile subscribers more generally). We set out below the framework we have adopted to calculate the possible overall effect of the NCCNs on mobile callers resulting from the Direct effect and the MTPE.

Overall effect on mobile callers

A5.14 In our calculation of the overall welfare effect on mobile callers, we include the welfare impact of the Direct effect and the MTPE of the NCCNs:

$$\Delta W_{Overall} = \Delta CS_{DE} + \Delta CS_{MTPE}$$

where:

- ΔCS_{DE} is the change in consumer surplus on calls to the affected number ranges as a result of the Direct effect; and
- ΔCS_{MTPE} is the change in consumer surplus on all mobile services more generally as a result of the MTPE.

A5.15 Our calculation does not include benefits to mobile callers from the Indirect effect given the considerable uncertainty about the extent to which these result from the NCCNs. In addition, our calculation does not take account of any additional weight we consider should be placed on the Direct effect to reflect the externalities we have identified (see paragraphs 7.191-7.193).

A5.16 In the sub-sections below, we set out how we have calculated these changes in consumer surplus. We have done this for the scenarios we considered in our Provisional Conclusions, as well as the additional scenarios in which the demand response is weaker. The results of these calculations are set out in Annex 6.

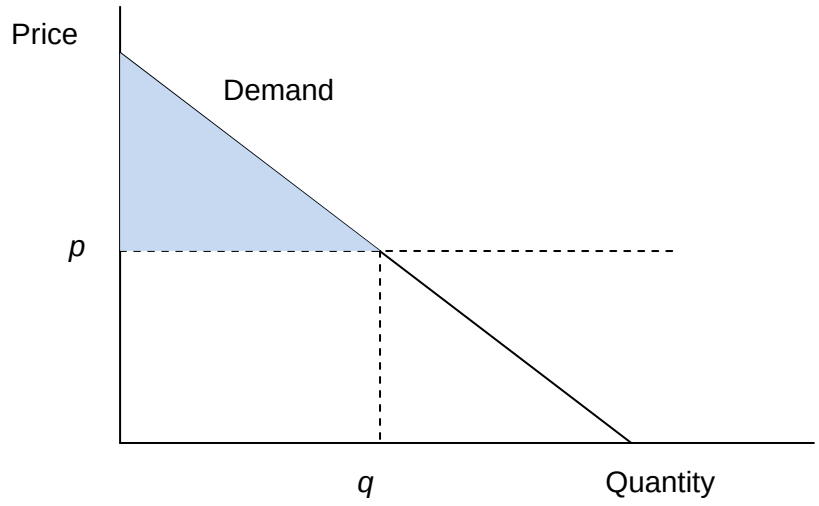
Welfare impact of the Direct effect

A5.17 We estimate the welfare impact on mobile callers of a change in the Direct effect at each price point covered by the NCCNs in Dispute by calculating the change in consumer surplus on the calls to the affected number ranges.

A5.18 Consumer surplus is defined as the difference between what consumers are willing to pay for a product and the price they actually pay to receive it. Willingness to pay

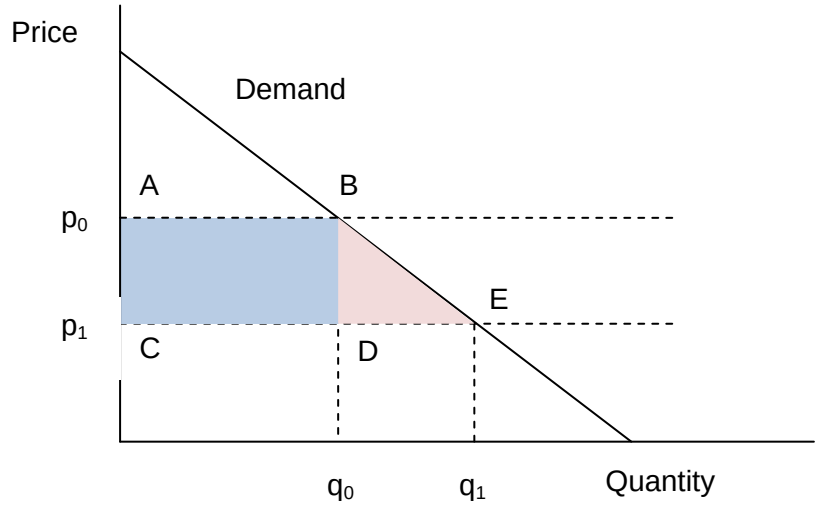
is shown by a demand curve, a downward sloping demand curve is show in Figure A5.2 below. The shaded triangle illustrates consumer surplus when price is equal to p.

Figure A5.2: An illustration of consumer surplus



A5.19 When the price of a good falls, consumer surplus increases for two reasons. Firstly, the difference between willingness to pay and price actually paid increases for those customers who were already purchasing the product. This is represented by the rectangle ABCD in Figure A5.3 below. Secondly, some customers who did not purchase the product before because they were not willing to pay the initial price now begin purchasing the product, and receive benefit from this. This increase in consumer surplus is represented by the triangle BDE below.

Figure A5.3: A change in consumer surplus resulting from a price reduction



A5.20 Figure A5.3 illustrates a change in consumer surplus where there is linear demand. Analysing the same scenario under a different assumption about demand leads to a different result because the area in triangle BDE changes when the slope of the demand curve becomes more or less steep, or exhibits more curvature.

A5.21 These diagrams show the following are key inputs to calculating the change in consumer surplus resulting from the Direct effect:

- Initial retail call price and call volumes;
- The shape of the demand curve for calls to the relevant number range; and
- Retail call price and call volumes after the NCCNs (which both depend on the shape of the demand curve).

A5.22 We have therefore calculated the welfare impact for each of the scenarios considered in our assessment of the Direct effect. The calculations have been carried out on the basis of prices including VAT.

A5.23 To the extent that there is a magnification of the volume increase arising from price reductions because of positive externalities, our estimate (given by the change in consumer surplus on these calls) will understate the benefits to callers.

Welfare impact of the MTPE

A5.24 We adopt a similar approach to estimate the consumer welfare impact of the MTPE at each price point.

A5.25 We recognise in paragraphs 7.170-7.171 that an increase in the price of other mobile services due to the waterbed effect could result in a reduction in demand for these services. However, there is uncertainty around which (or how many) services the MNO will choose to increase the prices of, and therefore whether and to what extent there will be an impact on the level of demand for other services in response to the MTPE. Therefore, for the purposes of calculating the consumer welfare impact of the MTPE, we assume that there would be no impact on the level of demand for these services. This will be equal to the reduction in MNO profits resulting from the NCCNs multiplied by the strength of the MTPE (plus VAT[474]).

A5.26 To the extent that there is an impact on the level of demand for other services in response to the MTPE, the welfare impact of the MTPE will be understated in our illustrative analysis.

Net welfare impact on callers

A5.27 We add together the estimates of the welfare impact of the Direct effect and MTPE to arrive at an estimate of the impact on callers. As the MTPE estimates are a range rather than point estimate, our overall estimate of the consumer impact is also a range.

A5.28 In Annex 6, we present a range for the net welfare impact on callers under each NCCN, for each of the following scenarios:

- Linear demand scenario (calibrated using the Lerner condition) assuming MCO of 0.8ppm;

[474] When calculating the change in consumer surplus arising from the MTPE, we include VAT.

- Constant elasticity demand scenario (calibrated using the Lerner condition) assuming MCO of 0.8ppm; and

- Weaker demand response scenarios (assuming point elasticity values of 0.4, 0.3, 0.2, in absolute terms) assuming MCO of 0.8ppm.

Annex 6

Supplementary results of our quantitative analysis

Introduction

A6.1 This annex supplements Annex 4 and sets out the results of our additional quantitative analysis for NCCN 1101, 1107 and 1046, which we have carried out since our Provisional Conclusions.

A6.2 As explained in paragraph 7.79, we have extended our analysis of the modified Dobbs 3 model to include the assumption that retail demand is inelastic at prevailing prices. We describe our methodology in Annex 5.

A6.3 We have also calculated the overall welfare effect on callers from the NCCNs using the outputs of our theoretical assessment of the Direct effect (see paragraph 7.190). Our approach is set out in more detail in Annex 5.

A6.4 For each of BT's NCCNs we set out the following results:

- the predicted profit-maximising retail prices for calls to the affected number ranges assuming inelastic demand in the absence of a spillover effect, and the estimated welfare impact on mobile callers of these predicted price changes;
- the estimated impact on MNOs' total profits made on calls to the affected number ranges assuming inelastic demand in the absence of a spillover effect;
- the estimated increase in TCP revenues from calls to the affected number ranges assuming inelastic demand in the absence of a spillover effect; and
- the estimated overall welfare impact on callers from the NCCNs, based on the results above, as well as the outputs of the modified Dobbs model assuming elastic demand at prevailing retail prices (set out in Annex 4).

A6.5 As explained in Annex 5, we have analysed the Direct effect under the assumption that retail call demand is linear, and that the elasticity of demand at the initial price and quantity is between 0.4 and 0.2 (in absolute terms).[475]

A6.6 All of the results in this Annex are based on the assumption that the marginal cost of origination is 0.8ppm.

[475] Where the results are the same (or very similar) for different assumptions about the elasticity of demand at the initial price and quantity, we present just one set of results and note accordingly.

NCCN 1101

Direct effect assuming weaker demand response

A6.7 Table A6.1 shows the predicted profit-maximising prices for each price point covered by NCCN 1101, assuming the elasticity of demand at the initial price and quantity is 0.4 (in absolute terms). The predicted retail prices are the same when assuming demand is relatively more inelastic (i.e. 0.3 and 0.2 in absolute terms).[476]

A6.8 Given the predicted retail prices are unchanged from the existing retail prices in these scenarios, the estimated welfare impact of the Direct effect on mobile callers is zero.

Table A6.1: Direct effect results for NCCN 1101: inelastic demand scenario (point elasticity = -0.4, MCO = 0.8ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Welfare impact on callers of Direct effect
0844 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
0844 – Orange	[✂]	[✂]	0%	[✂]	[✂]
0871 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
0871 – Orange	[✂]	[✂]	0%	[✂]	[✂]
Total					[✂]

Source: Ofcom

Impact on MNOs' profits assuming weaker demand response

A6.9 Table A6.2 shows the estimated impact of NCCN 1101 on the total profits made by EE on calls to 0843/4 and 0871/2/3 numbers, based on the predicted profit maximising price for each price point.[477] The profit impact is calculated assuming the elasticity of demand at the initial price and quantity is 0.4 (in absolute terms). The profit impact is very similar under the assumption that demand is relatively more inelastic (i.e. 0.3 and 0.2 in absolute terms).

[476] Notes: (i) "Step on wholesale tariff schedule" refers to the step of the wholesale tariff schedule to which the predicted price corresponds, where 1 refers to the bottom step, 2 refers to the next step, and so on. (ii) Prices and the increase in WTC are expressed in ether pence per minute or pence per call terms depending on whether the wholesale tariff schedules specify pence per minute or pence per call WTCs (see paragraphs A3.18 to A3.21). (iii) Consumer welfare impact of the Direct effect of NCCN1107 is measured in £million.

[477] This is the profit impact on calls to the affected number ranges after EE has adjusted retail call prices as predicted under our analysis of the Direct effect.

Table A6.2: Estimated impact on MNO's profits of NCCN 1101: inelastic demand scenarios, (point elasticity = -0.4, MCO = 0.8ppm), £ million

Price point	MNO profits before	MNO profits after	Change in profits
0844 - T-Mobile	[✂]	[✂]	[✂ -62%]
0844 – Orange	[✂]	[✂]	[✂ -80%]
0871 - T-Mobile	[✂]	[✂]	[✂ -84%]
0871 – Orange	[✂]	[✂]	[✂ -62%]
Total	[✂]	[✂]	[✂ -68%]

Source: Ofcom

A6.10 In the inelastic demand scenarios we have considered, EE's total profits on calls to 0843/4 and 0871/2/3 numbers are estimated to fall by around £[✂] per annum as a result of NCCN 1101.

A6.11 We note that these figures do not represent our estimates of the MTPE, as this will depend on the strength of the MTPE and the speed with which it operates. In addition, the impact of the MTPE on consumer welfare will depend on which services, and how many, EE chooses to increase the prices of. We go on to quantify the welfare impact of the MTPE as part of our illustrative calculation of the overall welfare impact on callers of NCCN 1101.

Impact on TCP revenues assuming weaker demand response

A6.12 Table A6.3 shows the estimated increase in TCP revenues under NCCN 1101 from T-Mobile and Orange calls to 0843/3 and 0871/2/3 numbers, based on the predicted profit-maximising price for each price point and the applicable wholesale termination charge at this price. The revenue impact is calculated assuming the elasticity of demand at the initial price and quantity is 0.4 (in absolute terms). The revenue impact is very similar under the assumption that demand is relatively more inelastic (i.e. 0.3 and 0.2 in absolute terms).

Table A6.3: Estimated impact on TCP revenue of NCCN 1101: inelastic demand scenarios, (point elasticity = -0.4, MCO=0.8ppm), £ million

Price point	TCP revenue before	TCP revenue after	Change in revenue
0844 - T-Mobile	[✂]	[✂]	[✂ 295%]
0844 – Orange	[✂]	[✂]	[✂ 107%]
0871 - T-Mobile	[✂]	[✂]	[✂ 74%]
0871 – Orange	[✂]	[✂]	[✂ 129%]
Total	[✂]	[✂]	[✂ 142%]

Source: Ofcom

A6.13 TCP revenues from T-Mobile and Orange calls to 0843/3 and 0871/2/3 numbers are estimated to increase by around £[✂] per annum, as a result of NCCN 1101. The impact on TCP revenues reflects changes in call volumes as a result of any change in retail prices, and the increase in termination charges.

Consumer welfare assessment (all scenarios)

A6.14 Table A6.4 shows the overall welfare impact on callers from NCCN 1101 from the Direct effect and the MTPE. This is calculated using the outputs of the modified Dobbs model assuming elastic demand at prevailing retail prices (as presented in Annex 4), and the outputs of our additional analysis assuming inelastic demand in the absence of a spillover effect (set out above).

A6.15 We set out in Annex 5 how we have quantified the MTPE for the purposes of this analysis. In summary, we use a range of values for the strength of the waterbed effect, from 40% to 80%, and assume no impact on the level of demand. As we calculate a range for the estimates of the MTPE, the overall estimate of the consumer impact is also a range.

Table A6.4: Net impact on consumers of NCCN 1101: all scenarios, (MCO=0.8ppm), £ million

Scenario		Direct effect	MTPE	Net benefit to callers
Dobbs 3	Linear demand	[✂]	[✂]	[✂]
	Constant elasticity demand	[✂]	[✂]	[✂]
Linear demand with a weaker demand response	Point elasticity = -0.4	[✂]	[✂]	[✂]
	Point elasticity = -0.3	[✂]	[✂]	[✂]
	Point elasticity = -0.2	[✂]	[✂]	[✂]

Source: Ofcom

NCCN 1107

Direct effect assuming weaker demand response

A6.16 Table A6.5 shows the predicted profit-maximising prices for each price point covered by NCCN 1107, assuming the elasticity of demand at the initial price and quantity is 0.4 (in absolute terms). The predicted retail prices are the same when assuming demand is relatively more inelastic (i.e. 0.3 and 0.2 in absolute terms).[478]

A6.17 Table A6.5 also shows the estimated welfare impact on callers of these predicted price changes. We estimate that the Direct effect of NCCN 1107 will result in a increase in the consumer surplus of T-Mobile and Orange subscribers of around £[✂]per annum assuming the elasticity of demand at the initial price and quantity is 0.4 (in absolute terms). The estimated welfare impact figures are very similar under

[478] Notes: (i) "Step on wholesale tariff schedule" refers to the step of the wholesale tariff schedule to which the predicted price corresponds, where 1 refers to the bottom step, 2 refers to the next step, and so on. (ii) Prices and the increase in WTC are expressed in ether pence per minute or pence per call terms depending on whether the wholesale tariff schedules specify pence per minute or pence per call WTCs (see paragraphs A3.18 to A3.21). (iii) Consumer welfare impact of the Direct effect of NCCN1107 is measured in £million.

the assumption that demand is relatively more inelastic (i.e. 0.3 and 0.2 in absolute terms).

Table A6.5: Direct effect results for NCCN 1107: inelastic demand scenario (point elasticity = -0.4, MCO = 0.8ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Welfare impact on callers of Direct effect
09 - p10 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
09 - p10 - Orange	[✂]	[✂]	-20%	[✂]	[✂]
09 - p7 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
09 - p7 – Orange	[✂]	[✂]	0%	[✂]	[✂]
09 - p34 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
09 - p34 - Orange	[✂]	[✂]	0%	[✂]	[✂]
09 - p16 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
09 - p16 - Orange	[✂]	[✂]	-5%	[✂]	[✂]
09 - p36 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
09 - p36 - Orange	[✂]	[✂]	-8%	[✂]	[✂]
09 - p8 - T-Mobile	[✂]	[✂]	-17%	[✂]	[✂]
09 - p8 – Orange	[✂]	[✂]	0%	[✂]	[✂]
09 - p0 - T-Mobile	[✂]	[✂]	-19%	[✂]	[✂]
09 - p0 – Orange	[✂]	[✂]	0%	[✂]	[✂]
09 - ff18 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
09 - ff18 - Orange	[✂]	[✂]	-13%	[✂]	[✂]
09 - P7 090682 - T-Mobile	[✂]	[✂]	-27%	[✂]	[✂]
09 - P7 090682 – Orange	[✂]	[✂]	-15%	[✂]	[✂]
09 - p5 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
09 - p5 – Orange	[✂]	[✂]	-16%	[✂]	[✂]
09 - ff13 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
09 - ff21 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
09 - p3 - T-Mobile	[✂]	[✂]	0%	[✂]	[✂]
Total					[✂]

Source: Ofcom

Impact on MNOs' profits assuming weaker demand response

A6.18 Table A6.6 shows the estimated impact of NCCN 1107 on the total profits made by EE on calls to 09 numbers, based on the predicted profit maximising price for each price point.[479] The profit impact is calculated under the assumption that the elasticity of demand at the initial price and quantity is 0.4 (in absolute terms). The profit impact is very similar under the assumption that demand is relatively more inelastic (i.e. 0.3 and 0.2 in absolute terms).

[479] This is the profit impact on calls to the affected number ranges after EE has adjusted retail call prices as predicted under our analysis of the Direct effect.

Table A6.6: Estimated impact on MNO's profits of NCCN 1107: inelastic demand scenarios, (point elasticity = -0.4, MCO=0.8ppm), £ million

Price point	MNO profits before	MNO profits after	Change in profits
09 - p10 - T-Mobile	[✂]	[✂]	[✂ -65%]
09 - p10 - Orange	[✂]	[✂]	[✂ -64%]
09 - p7 - T-Mobile	[✂]	[✂]	[✂ -76%]
09 - p7 – Orange	[✂]	[✂]	[✂ -64%]
09 - p34 - T-Mobile	[✂]	[✂]	[✂ -51%]
09 - p34 - Orange	[✂]	[✂]	[✂ -61%]
09 - p16 - T-Mobile	[✂]	[✂]	[✂ -50%]
09 - p16 - Orange	[✂]	[✂]	[✂ -57%]
09 - p36 - T-Mobile	[✂]	[✂]	[✂ -66%]
09 - p36 - Orange	[✂]	[✂]	[✂ -57%
09 - p8 - T-Mobile	[✂]	[✂]	[✂ -71%]
09 - p8 – Orange	[✂]	[✂]	[✂ -113%]
09 - p0 - T-Mobile	[✂]	[✂]	[✂ -78%]
09 - p0 – Orange	[✂]	[✂]	[✂ -70%]
09 - ff18 - T-Mobile	[✂]	[✂]	[✂ -51%]
09 - ff18 - Orange	[✂]	[✂]	[✂ -59%]
09 - P7 090682 - T-Mobile	[✂]	[✂]	[✂ -76%]
09 - P7 090682 - Orange	[✂]	[✂]	[✂ -69%]
09 - p5 - T-Mobile	[✂]	[✂]	[✂ -58%]
09 - p5 – Orange	[✂]	[✂]	[✂ -66%]
09 - ff13 - T-Mobile	[✂]	[✂]	[✂ -66%]
09 - ff21 - T-Mobile	[✂]	[✂]	[✂ -72%]
09 - p3 - T-Mobile	[✂]	[✂]	[✂ -68%]
Total	[✂]	[✂]	[✂ -66%]

Source: Ofcom

A6.19 In the inelastic demand scenarios we have considered, EE's total profits on calls to 09 numbers are estimated to fall by around £[✂] per annum as a result of NCCN 1107.

A6.20 We note that these figures do not represent our estimates of the MTPE, as this will depend on the strength of the MTPE and the speed with which it operates. In addition, the impact of the MTPE on consumer welfare will depend on which services, and how many, EE chooses to increase the prices of. We go on to quantify the welfare impact of the MTPE as part of our illustrative calculation of the overall welfare impact on callers of NCCN 1107.

Impact on TCP revenues assuming weaker demand response

A6.21 Table A6.7 shows the estimated increase in TCP revenues under NCCN 1107 from T-Mobile and Orange calls to 09 numbers, based on the predicted profit-maximising

price for each price point and the applicable wholesale termination charge at this price. The revenue impact is calculated assuming the elasticity of demand at the initial price and quantity is 0.4 (in absolute terms). The revenue impact is very similar under the assumption that demand is relatively more inelastic (i.e. 0.3 and 0.2 in absolute terms).

Table A6.7: Estimated impact on TCP revenue of NCCN 1107: inelastic demand scenarios, (point elasticity = -0.4, MCO=0.8ppm), £ million

Price point	TCP revenue before	TCP revenue after	Change in revenue
09 - p10 - T-Mobile	[✂]	[✂]	[✂ 73%]
09 - p10 - Orange	[✂]	[✂]	[✂ 87%]
09 - p7 - T-Mobile	[✂]	[✂]	[✂ 59%]
09 - p7 – Orange	[✂]	[✂]	[✂ 43%]
09 - p34 - T-Mobile	[✂]	[✂]	[✂ 16%]
09 - p34 - Orange	[✂]	[✂]	[✂ 46%]
09 - p16 - T-Mobile	[✂]	[✂]	[✂ 32%]
09 - p16 - Orange	[✂]	[✂]	[✂ 61%]
09 - p36 - T-Mobile	[✂]	[✂]	[✂ 46%]
09 - p36 - Orange	[✂]	[✂]	[✂ 65%]
09 - p8 - T-Mobile	[✂]	[✂]	[✂ 46%]
09 - p8 – Orange	[✂]	[✂]	[✂ 13%]
09 - p0 - T-Mobile	[✂]	[✂]	[✂ 31%]
09 - p0 – Orange	[✂]	[✂]	[✂ 22%]
09 - ff18 - T-Mobile	[✂]	[✂]	[✂ 41%]
09 - ff18 - Orange	[✂]	[✂]	[✂ 85%]
09 - P7 090682 - T-Mobile	[✂]	[✂]	[✂ 59%]
09 - P7 090682 – Orange	[✂]	[✂]	[✂ 52%]
09 - p5 - T-Mobile	[✂]	[✂]	[✂ 29%]
09 - p5 – Orange	[✂]	[✂]	[✂ 62%]
09 - ff13 - T-Mobile	[✂]	[✂]	[✂ 18%]
09 - ff21 - T-Mobile	[✂]	[✂]	[✂ 10%]
09 - p3 - T-Mobile	[✂]	[✂]	[✂ 29%]
Total	[✂]	[✂]	[✂ 45%]

Source: Ofcom

A6.22 TCP revenues from T-Mobile and Orange calls to 09 numbers are estimated to increase by around £[✂] per annum, as a result of NCCN 1107. The impact on TCP revenues reflects changes in call volumes as a result of any change in retail prices, and the increase in termination charges.

Consumer welfare assessment (all scenarios)

A6.23 Table A6.8 shows the overall welfare impact on callers from NCCN 1107 from the Direct effect and the MTPE. This is calculated using the outputs of the modified

Dobbs model assuming elastic demand at prevailing retail prices (as presented in Annex 4), and the outputs of our additional analysis assuming inelastic demand in the absence of a spillover effect (set out above).

A6.24 We set out in Annex 5 how we have quantified the MTPE for the purposes of this analysis. In summary, we use a range of values for the strength of the waterbed effect, from 40% to 80%, and assume no impact on the level of demand. As we calculate a range for the estimates of the MTPE, the overall estimate of the consumer impact is also a range.

Table A6.8: Net impact on consumers of NCCN 1107: all scenarios, (MCO-0.8ppm), £ million

Scenario		Direct effect	MTPE	Net benefit to callers
Dobbs 3	Linear demand	[✂]	[✂]	[✂]
	Constant elasticity demand	[✂]	[✂]	[✂]
	Point elasticity = -0.4	[✂]	[✂]	[✂]
	Point elasticity = -0.3	[✂]	[✂]	[✂]
	Point elasticity = -0.2	[✂]	[✂]	[✂]

Source: Ofcom

NCCN 1046

Direct effect assuming weaker demand response

A6.25 Tables A6.9 to A6.11 show the predicted profit-maximising prices for 080 calls for each MNO, in the inelastic demand response scenarios (assuming the elasticity of demand at the initial price and quantity is 0.4, 0.3 and 0.2 in absolute terms). The tables also show the estimated welfare impact on callers of the predicted price changes in these scenarios.[480]

A6.26 We estimate that the Direct effect of NCCN 1046 will result in a increase in the consumer surplus of the MNOs' subscribers of around £[✂] to £[✂], in these scenarios, depending on the assumption made about the elasticity of demand at the initial price and quantity.

[480] Notes: (i) "Step on wholesale tariff schedule" refers to the step of the wholesale tariff schedule to which the predicted price corresponds, where 1 refers to the bottom step, 2 refers to the next step, and so on. (ii) Prices and the increase in WTC are expressed in ether pence per minute or pence per call terms depending on whether the wholesale tariff schedules specify pence per minute or pence per call WTCs (see paragraphs A3.18-A3.21). (iii) Consumer welfare impact of the Direct effect of NCCN1107 is measured in £million.

Table A6.9: Direct effect results for NCCN 1046: inelastic demand scenario (point elasticity = -0.4, MCO = 0.8ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Consumer welfare impact
080 - T-Mobile	[✂]	[✂]	-65%	[✂]	[✂]
080 - Orange	[✂]	[✂]	-31%	[✂]	[✂]
080 - O2	[✂]	[✂]	-15%	[✂]	[✂]
080 - Vodafone	[✂]	[✂]	-4%	[✂]	[✂]
080 - H3G	[✂]	[✂]	-31%	[✂]	[✂]
Total					[✂]

Source: Ofcom

Table A6.10: Direct effect results for NCCN 1046: inelastic demand scenario (point elasticity = -0.3, MCO = 0.8ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Consumer welfare impact
080 - T-Mobile	[✂]	[✂]	-32%	[✂]	[✂]
080 - Orange	[✂]	[✂]	-31%	[✂]	[✂]
080 - O2	[✂]	[✂]	-15%	[✂]	[✂]
080 - Vodafone	[✂]	[✂]	-4%	[✂]	[✂]
080 - H3G	[✂]	[✂]	-31%	[✂]	[✂]
Total				[✂]	[✂]

Source: Ofcom

Table A6.11: Direct effect results for NCCN 1046: inelastic demand scenario (point elasticity = -0.2, MCO = 0.8ppm)

Price point	Initial average retail price (incl. VAT)	Predicted retail price (incl. VAT)	% change in retail price	Step on wholesale tariff schedule	Consumer welfare impact
080 - T-Mobile	[✂]	[✂]	-32%	[✂]	[✂]
080 - Orange	[✂]	[✂]	-31%	[✂]	[✂]
080 - O2	[✂]	[✂]	-15%	[✂]	[✂]
080 - Vodafone	[✂]	[✂]	-4%	[✂]	[✂]
080 - H3G	[✂]	[✂]	-31%	[✂]	[✂]
Total				[✂]	[✂]

Source: Ofcom

Impact on MNO's profits assuming weaker demand response

A6.27 Table A6.12 shows the estimated impact of NCCN 1046 on the total profits made by each MNO on calls to 080 numbers, based on the predicted profit maximising price for each price point.[481] The profit impact is calculated under different assumptions for the own price elasticity of demand for NTS calls at the initial price and quantity (from 0.4 to 0.2 in absolute terms).

Table A6.12: Estimated impact on MNO's profits of NCCN 1046: inelastic demand scenarios, (MCO=0.8ppm), £ million

Price point	MNO profits before	Point elasticity = -0.4		Point elasticity = -0.3		Point elasticity = -0.2	
		MNO profits after	Change in profits	MNO profits after	Change in profits	MNO profits after	Change in profits
080 - T-Mobile	[✂]	[✂]	[✂ -65%]	[✂]	[✂ -66%]	[✂]	[✂ -67%]
080 - Orange	[✂]	[✂]	[✂ -35%]	[✂]	[✂ -37%]	[✂]	[✂ -39%]
080 - O2	[✂]	[✂]	[✂ -24%]	[✂]	[✂ -25%]	[✂]	[✂ -27%]
080 - Vodafone	[✂]	[✂]	[✂ -17%]	[✂]	[✂ -17%]	[✂]	[✂ -17%]
080 - H3G	[✂]	[✂]	[✂ -35%]	[✂]	[✂ -37%]	[✂]	[✂ -39%]
Total	[✂]	[✂]	[✂ -37%]	[✂]	[✂ -38%]	[✂]	[✂ -39%]

Source: Ofcom

A6.28 In the inelastic demand scenarios we have considered, MNO' total profits on calls to 080 numbers are estimated to fall by between £[✂] and £[✂] per annum as a result of NCCN 1046, depending on the assumption made about the elasticity of demand at the initial price and quantity.

A6.29 We note that these figures do not represent our estimates of the MTPE, as this will depend on the strength of the MTPE and the speed with which it operates. In addition, the impact of the MTPE on consumer welfare will depend on which services, and how many, MNOs chooses to increase the prices of. We go on to quantify the welfare impact of the MTPE as part of our illustrative calculation of the overall welfare impact on callers of NCCN 1046.

Impact on TCP revenues assuming weaker demand response

A6.30 Table A6.13 shows the estimated increase in TCP revenues under NCCN 1046 from 080 calls made by the MNO's customers, based on predicted profit-maximising price for each price point and the applicable wholesale termination charge at this

[481] This is the profit impact on calls to the affected number ranges after EE has adjusted retail call prices as predicted under our analysis of the Direct effect.

price. The revenue impact is calculated under different assumptions for the own price elasticity of demand for NTS calls at the initial price and quantity (from 0.4 to 0.2 in absolute terms).

Table A6.13: Estimated impact on TCP revenue of NCCN 1046: inelastic demand scenarios, (MCO=0.8ppm), £ million

Price point	TCP revenue before	Point elasticity = -0.4		Point elasticity = -0.3		Point elasticity = -0.2	
		TCP revenue after	Change in revenue	TCP revenue after	Change in revenue	TCP revenue after	Change in revenue
080 - T-Mobile	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
080 - Orange	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
080 - O2	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
080 - Vodafone	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
080 - H3G	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
Total	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]	[✂]

Source: Ofcom

A6.31 TCP revenues from 080 calls made by the MNOs' customers are estimated to increase by between £[✂] and £[✂] per annum, as a result of NCCN 1046, depending on the assumption made about the elasticity of demand at the initial price and quantity.

Consumer welfare assessment (all scenarios)

A6.32 Table A6.14 shows the overall welfare impact on callers from NCCN 1046 from the Direct effect and the MTPE. This is calculated using the outputs of the modified Dobbs model assuming elastic demand at prevailing retail prices (as presented in Annex 4), and the outputs of our additional analysis assuming inelastic demand in the absence of a spillover effect (set out above).

A6.33 We set out in Annex 5 how we have quantified the MTPE for the purposes of this analysis. In summary, we use a range of values for the strength of the waterbed effect, from 40% to 80%, and assume no impact on the level of demand. As we calculate a range for the estimates of the MTPE, the overall estimate of the consumer impact is also a range.

Table A6.14: Net impact on consumers of NCCN 1046: all scenarios, (MCO=0.8ppm), £ million

Scenario		Direct effect	MTPE	Net benefit to callers
Dobbs 3	Linear demand	[✂]	[✂]	[✂]
	Constant elasticity demand	[✂]	[✂]	[✂]
Linear demand with a weaker demand response	Point elasticity = -0.4	[✂]	[✂]	[✂]
	Point elasticity = -0.3	[✂]	[✂]	[✂]
	Point elasticity = -0.2	[✂]	[✂]	[✂]

Source: Ofcom