



Annual licence fees for 900 MHz  
and 1800 MHz: methodology to  
derive a discount rate consistent  
with CPI inflation

Consultation

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## Section 1

# Executive Summary

- 1.1 This document follows our consultation in October 2013 setting out our proposals for revising annual fees payable for licences to use radio spectrum in the 900 MHz and 1800 MHz bands (the “October 2013 consultation”). That document set out the choice of inflation index we proposed to adopt for setting annual licence fees.
- 1.2 The purpose of this document is to further consult on the specific issue of **the methodology that we propose to adopt if we were to derive the appropriate discount rate for annualising the lump sum values into annual fees on the basis of CPI (instead of RPI)**, including the size of the wedge (ie. difference) between the forecast rates for the two indices.
- 1.3 If we adopt CPI as the inflation index, we propose to derive the CPI-based real discount rate by deflating the nominal discount rate by CPI inflation. We propose to use the Bank of England’s CPI inflation target of 2% as the long-run CPI inflation estimate used in this calculation, together with the Bank of England’s estimate for the long-run wedge between CPI and RPI of 1.3%.
- 1.4 We have not taken any decisions yet on any of the proposals set out in the October 2013 consultation, including on the specific issues of: the choice of inflation index (CPI or RPI) to be used to calculate ALF; which discount rate to use; or whether to update other discount rate parameters (aside from the updates that relate specifically to the inflation assumptions). For the avoidance of doubt, this consultation does not cover these issues.

## Section 2

# Scope of this consultation

- 2.1 In December 2010, the Government issued a Direction which, amongst other things, required Ofcom to revise the fees payable for licences to use radio spectrum in the 900 MHz and 1800 MHz bands so that they reflect full market value. The Direction also required that, in revising the fees, Ofcom must have particular regard to the sums bid for the licences in the auction of 800 MHz and 2.6 GHz spectrum.<sup>1</sup>
- 2.2 In October 2013 we published a consultation document setting out our proposals for revising annual fees payable for licences to use this radio spectrum (the “October 2013 consultation”)<sup>2</sup>. The consultation closed in January 2014 and responses have been published on our website.<sup>3</sup>
- 2.3 We said that we proposed to set annual licence fees (“ALF”) with a constant real price profile.<sup>4</sup> We then set out our proposals on the choice of inflation index to achieve this profile (namely, the retail price index (“RPI”) or the consumer price index (“CPI”)).<sup>5</sup> We explained that the choice of inflation index affects our methodology in two ways: (i) it affects the discount rate that we adopt at various stages of our ALF methodology (in estimating the lump sum value of spectrum and also in annualising such lump sums into ALF) and (ii) the way we derive the change in ALF each year in line with this measure of inflation.<sup>6</sup>
- 2.4 In the October 2013 consultation, we proposed to use, as a discount rate, the real cost of capital (the “weighted average cost of capital” or “WACC”) as calculated in the March 2011 Mobile Call Termination (“MCT”) Statement, which incorporates expectations about the RPI measure of inflation, forecast at the time to be 2.5%<sup>7</sup>. For consistency, we also proposed to use the RPI from a base date of March 2013 for the inflation adjustment that we proposed would be written into fees regulations<sup>8</sup>.
- 2.5 This is a further consultation on the specific issue of **the methodology that we propose to adopt if we were to derive the appropriate discount rate for annualising the lump sum values into annual fees on the basis of CPI (instead of RPI)**, including the size of the wedge between the forecast rates for the two indices. For the avoidance of doubt, this further consultation does not cover any of the following issues, on which stakeholders have already provided comments:
- the issue of which inflation index we should use for calculating ALF;
  - the discount rate to be used for annualisation purposes (i.e. the WACC or an alternative discount rate);

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<sup>1</sup> <http://www.legislation.gov.uk/ukdsi/2010/9780111500767/contents>

<sup>2</sup> Annual licence fees for 900 MHz and 1800 MHz spectrum

<http://stakeholders.ofcom.org.uk/consultations/900-1800-mhz-fees/>

<sup>3</sup> <http://stakeholders.ofcom.org.uk/consultations/900-1800-mhz-fees/?showResponses=true>

<sup>4</sup> Paragraphs 5.30 to 5.40 of the October 2013 consultation

<sup>5</sup> Paragraphs 5.41 to 5.47 of the October 2013 consultation

<sup>6</sup> Paragraph 5.41 of the October 2013 consultation

<sup>7</sup> Paragraph 5.41 of the October 2013 consultation

<sup>8</sup> Paragraph 5.45 of the October 2013 consultation

- whether and how we should update the other parameters (aside from the updates that relate specifically to the inflation assumptions) used to derive the appropriate discount rate.
- 2.6 We have not taken any decisions yet on any of the proposals set out in the October 2013 consultation, including on the specific issue of the **inflation index** (CPI or RPI) to be used to calculate ALF.
- 2.7 In particular, we have not yet taken any decision on the closely-related issue of the appropriate discount rate to use for the purpose of deriving annual fees from lump sum valuations. In the October 2013 consultation we said that we proposed to use the real WACC as determined in the March 2011 Mobile Call Termination Statement (adjusted to reflect changes to corporation tax). Stakeholders provided a significant degree of comment on whether the WACC is the appropriate discount rate and put forward other options (namely using a rate based on the cost of debt, or using the risk-free rate). In this further consultation we have included each of these three options to illustrate how we propose to derive the various discount rates on the basis of CPI if we were to adopt CPI in conjunction with the discount rate that we will consider most appropriate.<sup>9</sup> We are considering carefully all of the arguments put to us in the responses to the October 2013 consultation. Nothing in this document should be taken to indicate that we have made any decision about which discount rate to use.
- 2.8 We note that a fundamental issue in adjusting from RPI to CPI is the size of the wedge (i.e. difference) between the forecast rates for the two indices. If we were to use the past MCT WACC elements, this would imply a smaller wedge than anticipated will apply in future. We therefore present the effect on the discount rate of updating the inflation assumptions only. Nothing in this document should be taken to indicate that we have made any decision about whether to update the other discount rate parameters.

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<sup>9</sup> The issue of how to adjust the discount rate to reflect the choice of inflation index is relevant whichever discount rate – WACC, cost of debt or risk-free rate – is used.

## Section 2

# Background

## Our provisional position in the October 2013 consultation

- 3.1 In the October 2013 consultation we proposed to set ALF in constant real terms and sought views as to what price index to apply to ALF from a base date of March 2013 and, subsequently, from year to year following its introduction. We note that inflation affects our methodology in two ways. Most obviously, it is needed to derive the change in ALF each year in line with this measure of inflation. In addition, the real discount rate that we propose to adopt at various stages of our ALF methodology<sup>10</sup>, including in the annualisation process, embeds inflation expectations. More specifically, the real WACC as calculated in the March 2011 Mobile Call Termination Statement incorporates expectations about the RPI measure of inflation, forecast at the time to be 2.5%.<sup>11</sup> This real WACC underpins the cost modelling by which the current charge controls for mobile call termination are set.
- 3.2 In the October 2013 consultation, we noted that, in the different context of charge controls for local loop unbundling (LLU) and wholesale line rental (WLR), we had considered the choice of inflation index, CPI or RPI.<sup>12</sup> In that LLU/WLR consultation document we proposed to make CPI the inflation index for the LLU/WLR charge controls and it would be likely to be the starting point for considering indexation of future charge controls instead of RPI.<sup>13</sup> We recognised that there is an argument for using CPI for the purpose of revising ALF for broadly similar reasons, i.e. that CPI may provide a preferable measure of inflation.
- 3.3 However, as noted above, the real WACC calculations in the March 2011 Mobile Call Termination Statement were on the basis of RPI as the measure of inflation, not CPI. In order to use CPI in our ALF methodology we would need to derive the appropriate inflation forecasts and real discount rate consistent with the CPI measure of inflation and there are different ways in which such a calculation could be implemented.<sup>14</sup> If, instead, we use RPI in our ALF methodology, then there would be no need to adjust a discount rate which is already based on the RPI measure of inflation.
- 3.4 Therefore, in the October 2013 consultation, we favoured using the same real WACC as determined in the March 2011 Mobile Call Termination Statement as it provided the more straightforward approach.

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<sup>10</sup> In the October 2013 consultation, we explain that WACC is involved in estimating the lump sum value of spectrum: for example, to make international benchmarks with different licence periods comparable to the initial UK 20 year licence term, or when winning bidders will have to pay annual fees over time. WACC is then used as an input as the discount rate in the annualisation of lump sums into ALF.

<sup>11</sup> [http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT\\_statement\\_Annex\\_6-10.pdf](http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT_statement_Annex_6-10.pdf) (see from paragraph A8.54).

<sup>12</sup> See paragraphs 3.155-3.191 in 'Fixed access market reviews: Approach to setting LLU and WLR charge controls, July 2013' [http://stakeholders.ofcom.org.uk/binaries/consultations/llu-wlr-cc-13/summary/LLU\\_WLR\\_CC\\_2014.pdf](http://stakeholders.ofcom.org.uk/binaries/consultations/llu-wlr-cc-13/summary/LLU_WLR_CC_2014.pdf).

<sup>13</sup> The July 2013 'Review of the Wholesale Broadband Access Markets' argued along similar lines in favour of CPI - [http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/annexes/WBA\\_July\\_2013\\_annexes.pdf](http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/annexes/WBA_July_2013_annexes.pdf) (see from paragraph A12.82).

<sup>14</sup> Since CPI inflation tends to be lower than RPI inflation, using CPI in our ALF methodology would involve (compared to using RPI) higher initial fees that rise with inflation at a slower rate.

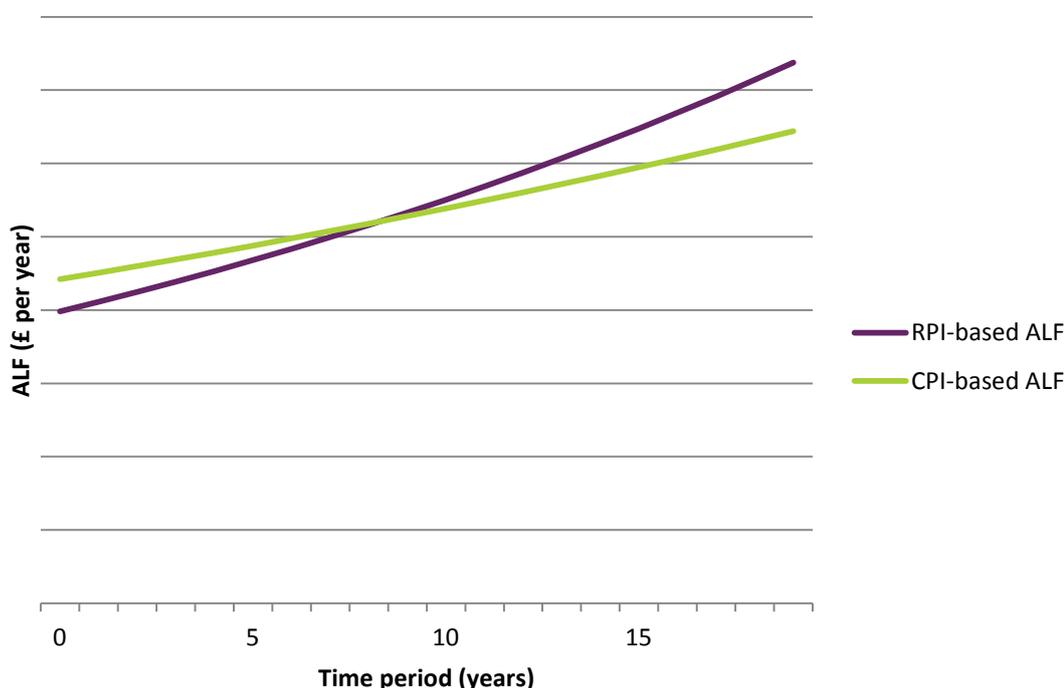
3.5 In order to maintain consistency in the indexation for ALF, we proposed also to use RPI, from a base date of March 2013. However, we welcomed views on whether we should use the RPI or CPI measure of inflation.

3.6 As to the potential effects of using CPI instead of RPI, in the October 2013 consultation we explained that a switch to using CPI inflation (as preferred by many respondents to the October 2013 consultation) would have two implications. Firstly, we proposed to build inflation into ALF through indexing by inflation each year. As CPI tends to be lower than RPI, ALF would increase more slowly with CPI than RPI inflation<sup>15</sup> (as illustrated in Figure 1 below). If we were to use CPI instead of RPI, the proposed increase in ALF each year to reflect inflation would be done using actual CPI data and would follow the same procedure as using RPI data.

3.7 The initial level of ALF would also be different, as this is derived using a real discount rate, which will be higher when using CPI than RPI (as the nominal discount rate is deflated by a smaller amount). Using CPI would therefore result in a higher base level of ALF which subsequently increases more slowly (as illustrated in Figure 1 below).

3.8 As we noted at paragraph 5.42 of the October 2013 consultation, although the accounting is complex, it is broadly accepted that, provided the inflation assumption built into the calculation of the WACC and the inflation adjustment written into fee regulations both use the same index, the present value of the ALF payments over time will be the same.

**Figure 1: ALF profiles with different inflation indices**



<sup>15</sup> See paragraph 5.44 of the October 2013 consultation.

## Stakeholder responses

- 3.9 In response to the consultation, stakeholders have generally argued that we should use CPI instead of RPI.
- 3.10 Vodafone Ltd (“Vodafone”), Hutchison 3G UK Ltd (“H3G”) and Everything Everywhere Ltd (“EE”) all suggest that CPI should be preferred to RPI for adjusting ALF for inflation.<sup>16</sup> They give a number of reasons for this:
- They argue that the declassification of RPI as a national statistic suggests it is not robust and calls into question whether it will continue to be available for the entire period over which ALF will be payable (Three, p.61; EE, p.45; Vodafone, p.49).
  - They also noted that operators’ indifference between inflation measures would not hold if (a) it was more difficult to forecast one inflation index over another, such that the outturn rate of inflation used in the price index to adjust the nominal ALF differed, ex post, from that rate of inflation used in the WACC; and (b) if that divergence worked systematically to the advantage or disadvantage of the licensees. They argued that looking at evidence of the differences in the range of forecasts for RPI and CPI, and historical averages and standard deviations of the two measures, suggests there being less scope for divergence between the lump sum value and the (ex post) present value of the stream of ALF payments under a CPI, rather than RPI, form of indexation (Annex C of Three’s response, p.18-19).
  - According to a respondent, it is likely a full cost causality analysis would suggest CPI was a more relevant metric in reflecting the underlying cost drivers of a hypothetical efficient MNO, as the RPI measure includes a number of housing cost items which would be irrelevant to an MNO. ONS analysis indicates that these housing cost items explain a material proportion of the difference between the RPI and CPI measures (Annex C of Three’s response, p.20).
  - Another stakeholder argued that the use of inflation indexation has no obvious historical precedent in mobile spectrum fee setting, and thus there is less of a consistency problem in using CPI rather than RPI (Vodafone, p.49). Further, Three notes that regulators, including Ofcom, are actively considering and using CPI (Three, p.61; see also Annex C of Three’s response, p.20).

## Our current position and this consultation

- 3.11 As explained in the October 2013 consultation, in order to use CPI in our proposed ALF methodology we would need to derive the appropriate inflation forecast and real discount rate consistent with the CPI measure of inflation. This is because one of the key building blocks underlying the discount rate, the risk-free rate, is estimated using information from yields on index linked gilts, these being indexed to RPI.
- 3.12 In light of stakeholders’ responses and the issues already identified in using RPI, we have set out in this consultation how we propose to adjust the discount rate used for converting the lump sum values into annual fees to reflect CPI rather than RPI inflation, if we were to use CPI in our final decision. As already explained, this does not mean that we have made a decision to use CPI rather than RPI. Rather, we are seeking views on whether, if we were to use CPI, the methodological approach set out in this consultation would be appropriate.

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<sup>16</sup> Telefónica UK Ltd (“Telefónica”) and Prospect did not comment on the merits of RPI compared to CPI, but argued that our RPI assumption was too low (Telefónica, p.137-141; Prospect, p.10-11).

## Section 3

# Proposed approach

## High level description of our proposed approach

- 4.1 Our proposed approach for deriving the real discount rate would be to deflate the nominal discount rate by CPI inflation, using the formula  $((1 + \text{nominal discount rate}) / (1 + \text{inflation rate})) - 1$ .
- 4.2 This should produce the same result as starting from the real discount rate derived from nominal components deflated by RPI inflation expectations, then applying a RPI to CPI conversion factor. This RPI to CPI conversion factor would reflect the expected long run difference in RPI and CPI and is derived as  $(1 + \text{RPI}) / (1 + \text{CPI})$ .

## What estimate of the long-run CPI and RPI should be used?

- 4.3 The Bank of England has a long-run CPI target of 2%.<sup>17</sup> This target has been in place since December 2003, when the government first changed the remit of the Monetary Policy Committee (MPC) of the Bank to target inflation measured by CPI.<sup>18</sup> This is a symmetrical target (and so inflation below the target requires as much attention as inflation above the target), and if the target is missed by more than one percentage point on either side the Governor of the Bank must write an open letter to the Chancellor explaining the reasons why this has occurred and what the Bank proposes to do to ensure inflation comes back to the target.
- 4.4 The primary objective of the MPC is price stability, embodied by this target, with other objectives subsidiary to this – for example, the Bank of England’s February 2014 Inflation Report notes that *“The objective of monetary policy is to achieve the inflation target, and, subject to that, to support the Government’s economic policies, including those for growth and employment.”*<sup>19</sup> While this does not mean that inflation will constantly be held at 2% each and every month, the aim is to set monetary policy so that inflation can be brought back to target within a reasonable time period without creating undue instability in the economy.
- 4.5 Achieving CPI inflation of 2% is therefore a stable target of significant importance to monetary policy. This seems to be the best estimate available to us as to what CPI inflation will be in the long-run.

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<sup>17</sup> <http://www.bankofengland.co.uk/monetarypolicy/Pages/framework/framework.aspx>

<sup>18</sup> <http://www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2004/remitletter2004.pdf>.

Prior to this, the Bank’s target was for inflation of 2.5% as measured by the RPIX, which stood from May 1997 (for a brief description of the history of UK monetary policy frameworks, see HM Treasury *Review of the monetary policy framework*, March 2013, p.11-12

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/221567/ukecon\\_mon\\_policy\\_framework.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221567/ukecon_mon_policy_framework.pdf)).

<sup>19</sup> Bank of England Inflation Report, February 2014, p. 8

<http://www.bankofengland.co.uk/publications/Documents/inflationreport/2014/ir14feb.pdf>

4.6 We calculate the long-run RPI as CPI plus the wedge between CPI and RPI. The Bank of England's February 2014 Inflation Report sets out the Bank's estimate for the long-run wedge between CPI and RPI.<sup>20</sup> From 2005-2013, the average wedge was 0.5 percentage points. However, various changes in the factors which contribute to the wedge mean the Bank of England's central, long-run estimate of the wedge is now 1.3 percentage points. These factors include:

- The formula effect, which arises due to different statistical methods used to aggregate data for the prices of individual items. The contribution of the formula effect to the wedge has increased since 2010 due to changes in how the ONS collects clothing prices.<sup>21</sup>
- Mortgage interest payments and other housing costs are included in RPI but not CPI.
- Other differences in coverage and weights e.g. the weights used in the two indices are based on different sources and capture slightly different groups of consumers. Since 2005 the effect of other differences partly reflects increases in energy and import prices, tuition fees and VAT, which have a smaller weight in the RPI than in the CPI, and so boosted RPI inflation by less than CPI inflation. In the long run, these items are expected to grow at rates consistent with CPI inflation at the 2% target, and the contribution from other differences to the wedge is expected to fall.

4.7 The Bank of England notes that its estimate of 1.3 percentage points is similar to the Office of Budget Responsibility's estimate of 1.3 to 1.5 percentage points,<sup>22</sup> although it also notes discussions with market participants suggest that the long-run wedge priced into inflation breakevens is a little lower than the Bank staff estimate, at around 0.9 to 1 percentage points on average.

4.8 We consider the Bank of England's estimate to be an appropriate indicator of the long-run size of the wedge between CPI and RPI, and so we propose to use a value for the difference between RPI and CPI of 1.3%. Combined with the 2% CPI estimate, we propose to use an RPI estimate of 3.3%.

4.9 The RPI to CPI conversion factor that we propose to use is therefore  $(1+0.033)/(1+0.02) = 1.013$

### Worked example of effect of the change

4.10 For illustration we explain how the conversion would work using the figures in the ALF consultation. We also present the effect on the discount rate if we were instead to use the cost of debt or risk-free rate.

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<sup>20</sup> Bank of England Inflation Report, February 2014, p. 34-35

<http://www.bankofengland.co.uk/publications/Documents/inflationreport/2014/ir14feb.pdf>

<sup>21</sup> The Bank of England notes that the decision to contemplate only routine changes to the RPI, which effectively rules out a change in the formulae used in its construction, contributed to the UK Statistics Authority's decision to cancel the designation of the RPI as a national statistic. No further methodological changes to RPI are therefore incorporated in the Bank staff's estimate of the long-run wedge.

<sup>22</sup> Miller, R (2011), *The long-run difference between RPI and CPI inflation*, OBR Working Paper No. 2 <http://cdn.budgetresponsibility.independent.gov.uk/Working-paper-No2-The-long-run-difference-between-RPI-and-CPI-inflation.pdf>.

- 4.11 As noted above, in the October 2013 consultation we proposed to use the 2011 MCT WACC as the discount rate. However, we proposed to update this to a post-tax WACC reflecting the reduction in the rate of corporation tax since the 2011 MCT Statement was published. In addition, as noted at paragraph 2.8 above, the worked examples below use a higher estimate of RPI than was adopted in the 2011 MCT WACC. Both of these changes would change the discount rate relative to that published in the 2011 MCT Statement. For clarity, we first set out the effect of the changes on the different discount rates. We then explain how the change to CPI inflation would work through those discount rates.
- 4.12 Table 1 below sets out the WACC given in the 2011 MCT Statement and the parameters feeding into this figure, and the effect on the different parameters of changing the corporation tax rate and the RPI inflation assumption.

**Table 1: MCT 2011 WACC parameters**

WACC Component (mid-point estimates where appropriate)	March 2011 Statement	With 20% corporation tax	With 20% corporation tax and 3.3% RPI inflation
Real <sup>1</sup> risk-free rate	1.5%	1.5%	1.5%
RPI inflation	2.5%	2.5%	3.3%
Nominal risk-free rate	4.0%	4.0%	4.8% <sup>23</sup>
Equity Risk Premium	5%	5%	5%
Equity Beta	0.76	0.76	0.76
Asset beta	0.56	0.56	0.56
Cost of equity (post tax)	7.8%	7.8%	8.6% <sup>24</sup>
Debt premium	1.5%	1.5%	1.5%
Corporate tax rate	24%	20%	20%
Cost of debt (post tax)	4.2%	4.4% <sup>25</sup>	5.1% <sup>26</sup>
Gearing	30%	30%	30%
WACC (pre-tax nominal)	8.9%		
WACC (post-tax nominal)	6.7%	6.8% <sup>27</sup>	7.6% <sup>28</sup>
WACC (pre-tax real <sup>1</sup> )	6.2%		
WACC (post-tax real <sup>1</sup> )	4.1%	4.2% <sup>29</sup>	4.1% <sup>30</sup>

<sup>1</sup> Real with respect to RPI

<sup>23</sup> Nominal risk-free rate =  $(1 + \text{real risk-free rate}) \times (1 + \text{RPI inflation}) - 1 = (1 + 1.5\%) \times (1 + 3.3\%) - 1 = 4.85\%$ .

<sup>24</sup> Cost of equity = nominal risk-free rate + (equity beta \* equity risk premium) =  $4.85\% + (0.76 \times 5\%) = 8.64\%$ .

<sup>25</sup> Pre-tax cost of debt = nominal risk-free rate + debt premium =  $4.0\% + 1.5\% = 5.5\%$ . Post-tax cost of debt = pre-tax cost of debt \* (1 - tax rate) =  $5.5\% \times (1 - 20\%) = 4.43\%$ .

<sup>26</sup> Pre-tax cost of debt = nominal risk-free rate + debt premium =  $4.85\% + 1.5\% = 6.35\%$ . Post-tax cost of debt = pre-tax cost of debt \* (1 - tax rate) =  $6.35\% \times (1 - 20\%) = 5.08\%$ .

<sup>27</sup> Post-tax nominal WACC = (1 - gearing) \* cost of equity + gearing \* post-tax cost of debt =  $((1 - 30\%) \times 7.82\%) + (30\% \times 4.43\%) = 6.81\%$ .

<sup>28</sup> Post-tax nominal WACC = (1 - gearing) \* cost of equity + gearing \* post-tax cost of debt =  $((1 - 30\%) \times 8.64\%) + (30\% \times 5.08\%) = 7.57\%$ .

<sup>29</sup> Post-tax real WACC =  $(1 + \text{Post-tax nominal WACC}) / (1 + \text{RPI inflation}) - 1 = (1 + 0.0681) / (1 + 0.025) - 1 = 4.2\%$ . This is set out in paragraph 5.73 of the October 2013 consultation.

<sup>30</sup> Post-tax real WACC =  $(1 + \text{Post-tax nominal WACC}) / (1 + \text{RPI inflation}) - 1 = (1 + 0.0757) / (1 + 0.033) - 1 = 4.1\%$ .

- 4.13 In this consultation, where we use the WACC as the discount rate, we use the figures for post-tax nominal and RPI-based real WACC from the final column in Table 1 as the starting point in converting to CPI-based numbers.
- 4.14 Where we use the cost of debt as the discount rate, we convert the post-tax cost of debt in the final column in Table 1 into a RPI-based real rate, which gives 1.7%.<sup>31</sup>
- 4.15 Where using the risk-free rate as a proxy for the rate faced in raising debt it may be appropriate to adjust it to reflect the tax shield on debt. This would give a post-tax nominal risk-free rate of 3.9%<sup>32</sup> and a post-tax real risk-free rate of 0.6%.<sup>33</sup>

## WACC

- 4.16 As set out above, our starting figures based on RPI inflation and 20% corporation tax are:

- Nominal post-tax WACC: 7.6%
- Real (RPI-deflated) post-tax WACC: 4.1%

- 4.17 Deflating the nominal WACC by CPI would give a CPI-based real WACC of **5.5%**. This is calculated as follows:

$$(1+\text{nominal WACC})/(1+\text{inflation rate}) - 1 = (1+0.076)/(1+0.02) - 1 = 5.5\%$$

- 4.18 As noted above, this gives the same result as applying the conversion factor above:

$$((1+\text{real WACC}) * \text{conversion factor}) - 1 = ((1+0.041) * 1.013) - 1 = 5.5\%$$

## Cost of debt

- 4.19 As set out above, our starting figures based on 3.3% RPI inflation and 20% corporation tax are:

- Nominal cost of debt (post-tax): 5.1%
- Real (RPI-deflated) cost of debt (post-tax): 1.7%

- 4.20 Deflating the nominal cost of debt by CPI gives a CPI-based real cost of debt of **3%**. This is calculated as follows:

$$(1+\text{nominal cost of debt})/(1+\text{inflation rate}) - 1 = (1+0.051)/(1+0.02) - 1 = 3\%$$

- 4.21 Again, applying the conversion factor gives the same result:

$$((1+\text{real cost of debt}) * \text{conversion factor}) - 1 = ((1+0.017) * 1.013) - 1 = 3\%$$

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<sup>31</sup> Post-tax real cost of debt =  $(1+\text{Post-tax nominal cost of debt})/(1+\text{RPI inflation})-1 = (1+0.051)/(1+0.033)-1 = 1.7\%$ .

<sup>32</sup> Post-tax nominal risk-free rate = pre-tax nominal risk-free rate\*(1-tax rate) =  $4.85\%*(1-20\%) = 3.9\%$

<sup>33</sup> Post-tax real risk-free rate =  $(1+\text{post-tax nominal risk-free rate})/(1+\text{RPI inflation})-1 = (1+0.39)/(1+0.33)-1 = 0.58\%$ .

## Risk-free rate

4.22 As set out above, our starting figures based on 3.3% RPI inflation and 20% corporation tax are:

- Nominal risk-free rate: 3.9%
- Real (RPI-deflated) risk-free rate: 0.6%.

4.23 Deflating the nominal risk free rate by CPI gives a CPI-based real risk-free rate of **1.9%**. This is calculated as follows:

$$(1+\text{nominal cost of debt})/(1+\text{inflation rate}) - 1 = (1+0.039)/(1+0.02) - 1 = 1.9\%$$

4.24 Again, applying the conversion factor gives the same result:

$$((1+\text{real risk free rate}) * \text{conversion factor}) - 1 = ((1+0.006) * 1.013) - 1 = 1.9\%$$

*Question 1: Do you agree with this methodology for deriving a real discount rate consistent with the CPI measure of inflation?*

*Question 2: Do you agree with our approach to deriving estimates of long-run RPI and CPI?*

## Annex 1

# Responding to this consultation

## How to respond

- A2.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 20 May 2014**.
- A2.2 Ofcom strongly prefers to receive responses using the online web form at <http://stakeolders.ofcom.org.uk/consultations/900-1800-mhz-fees-cpi/>, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.
- A2.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email [ALF@ofcom.org.uk](mailto:ALF@ofcom.org.uk) attaching your response in Microsoft Word format, together with a consultation response coversheet.
- A2.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.
- Helen Ferguson  
4<sup>th</sup> Floor  
Competition Group  
Riverside House  
2A Southwark Bridge Road  
London SE1 9HA
- A2.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.
- A2.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

## Further information

- A2.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Helen Ferguson on 020 7981 3672.

## Confidentiality

- A2.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, [www.ofcom.org.uk](http://www.ofcom.org.uk), ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

- A2.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A2.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at <http://www.ofcom.org.uk/about/accoun/disclaimer/>

## Next steps

- A2.11 Following the end of the consultation period, Ofcom intends to publish a statement on annual licence fees for 900 MHz and 1800 MHz in 2014.
- A2.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: [http://www.ofcom.org.uk/static/subscribe/select\\_list.htm](http://www.ofcom.org.uk/static/subscribe/select_list.htm)

## Ofcom's consultation processes

- A2.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.
- A2.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at [consult@ofcom.org.uk](mailto:consult@ofcom.org.uk) . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.
- A2.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Graham Howell, Secretary to the Corporation, who is Ofcom's consultation champion:

Graham Howell  
Ofcom  
Riverside House  
2a Southwark Bridge Road  
London SE1 9HA

Tel: 020 7981 3601

Email [Graham.Howell@ofcom.org.uk](mailto:Graham.Howell@ofcom.org.uk)

## Annex 2

# Ofcom's consultation principles

A3.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

### Before the consultation

A3.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

### During the consultation

A3.3 We will be clear about who we are consulting, why, on what questions and for how long.

A3.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A3.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A3.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.

A3.7 If we are not able to follow one of these principles, we will explain why.

### After the consultation

A3.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

## Annex 3

# Consultation response cover sheet

- A4.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, [www.ofcom.org.uk](http://www.ofcom.org.uk).
- A4.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.
- A4.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A4.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at [www.ofcom.org.uk/consult/](http://www.ofcom.org.uk/consult/).
- A4.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

## Cover sheet for response to an Ofcom consultation

### BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

### CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing	<input type="checkbox"/>	Name/contact details/job title	<input type="checkbox"/>
Whole response	<input type="checkbox"/>	Organisation	<input type="checkbox"/>
Part of the response	<input type="checkbox"/>	If there is no separate annex, which parts?	

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

### DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

Name

Signed (if hard copy)

## Annex 4

# Consultation questions

*Question 1: Do you agree with this methodology for deriving a real discount rate consistent with the CPI measure of inflation?*

*Question 2: Do you agree with our approach to deriving estimates of long-run RPI and CPI?*