



Commission for  
**Communications Regulation**

# **26 GHz Band Spectrum Award**

## **Draft Information Memorandum**

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**An Coimisiún um Rialáil Cumarsáide**  
**Commission for Communications Regulation**

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## Chapter 1

# 1 Introduction

- 1.1 In October 2017, the Commission for Communications Regulation (ComReg) published Document 17/85 by which it commenced a public consultation on the proposed granting of new rights of use for radio frequencies in a specified portion of the 26 GHz band (the “Award Spectrum”). In Document 18/12, published on 23 February 2018,<sup>1</sup> ComReg set out its response to Consultation 17/85 and its draft decision on the proposed granting of the Award Spectrum.
- 1.2 In Chapter 1 of Document 18/12, ComReg noted its intention to publish a draft Information Memorandum (IM) and to allow interested parties to comment on same, before publishing a final IM on the proposed 26 GHz Band award.
- 1.3 In light of its consideration of all submissions received in response to Document 17/85 and other relevant information before it, and having regard to its obligations under the Authorisation Regulations, ComReg now publishes this draft IM which details the processes and procedures ComReg envisages it would employ in implementing its substantive proposals as detailed in its draft Decision (Chapter 8 of Document 18/12). This draft IM reflects ComReg’s preliminary views as of its date of publication. For ease of reading, this draft IM reads as if it was a finalised document, however it is a draft document that is subject to further consultation and consideration by ComReg and no final decisions have yet been made by ComReg as to the content and effect of any final IM as may come into operation. Further, if this draft IM should become a final IM, whether in whole or in part, ComReg may make such amendments to the text of any final IM as it considers necessary and without further consultation, where such amendments are editorial only and do not affect the substance of the final IM, as to its meaning, purpose, or effect.
- 1.4 ComReg has sought to provide as much clarity as possible in this draft IM around the envisaged processes, procedures and rules, taking into account that some Interested Parties may not have previously participated in any similar process. Following publication of the final IM, ComReg will facilitate the submission of questions regarding the Award Process and Award Rules and will respond publicly to these questions on an anonymous basis. Interested parties should also note that though this IM is similar in form and substance to earlier information memoranda adopted by ComReg and used by in past spectrum auctions (e.g. 2012 MBSA and 2017 3.6 GHz auction) this IM is unique and is

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<sup>1</sup> ComReg Response to Consultation and Draft Decision on the 26 GHz Spectrum Award 2018

not identical to any earlier memoranda. This IM has been drafted by reference to the particular facts at hand, including the design and format of the proposed auction for granting new rights of use in the 26 GHz band. All prospective and actual Applicants should therefore familiarise themselves with this IM in its entirety and, in particular, should not merely rely upon knowledge of earlier information memoranda.

- 1.5 This draft IM has been published one week after the publication of the Response to Consultation and Draft Decision (Document 18/12). There will be a four week period in which to submit all responses on the draft IM which time period will not be extended. The deadline for submitting responses on the draft Decision (Document 18/12) and this draft IM is **17.00 on Friday 30 March 2018**.

## 1.1 Legal Framework and Agreement

- 1.6 In preparing this IM, ComReg has been guided by its statutory functions, objectives and duties relevant to its management of the radio frequency spectrum (see Annex 2 of Document 18/12), its most recent Spectrum Strategy Statement<sup>2</sup>, and its regulatory impact assessments (see Chapter 3 of Document 18/12).
- 1.7 The new rights of use for radio frequencies in the 26 GHz band will be assigned through licences granted by ComReg under the 1926 Act. In order to grant such licences, ComReg must make regulations under s.6 of the 1926 Act. Such regulations will prescribe, amongst other things, the form and duration of the licences, the terms on which they are granted, the circumstances and manner in which they may be renewed, suspended or revoked, the fees to be paid on the granting or renewal of the licences, and the terms and conditions to be observed by holders of such licences.
- 1.8 The making of such regulations is subject to the consent of the Minister for Communications Climate Action and Environment.<sup>3</sup> Annex 2 contains the new regulations, titled the Wireless Telegraphy (National Point-to-Point Licences) Regulations 2018 (“**P2P Regulations**”).
- 1.9 The P2P Regulations would revoke and replace the Wireless Telegraphy (National Point-to-Point and Point-to-Multipoint Block Licences) Regulations 2007 (s.i. 762/2007) which govern the current licences in the 26 GHz band.

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<sup>2</sup> ComReg Doc 16/50 – Radio Spectrum Management Strategy 2016 to 2018

<sup>3</sup> Section 37 of the Communications Regulation Act 2002 – “Regulations shall not be made by the Commission under section 6 of the Wireless Telegraphy Act, 1926, other than with the consent of the Minister.”

- 1.10 Any person seeking to obtain a right of use for a radio frequency, in the portion of the 26 GHz band being made available through the Award Process, must be authorised to provide an “electronic communications network” or “electronic communications service” in the State in accordance with the Authorisation Regulations 2011.<sup>4</sup> ComReg’s website has further details and the General Authorisation (Doc 03/81R5) sets out the general conditions of authorisation.
- 1.11 Chapters 2, 3, and 4 of this IM set out important provisions relating to the Award Process which Interested Parties must agree to if they wish to participate in the Award Process and which are binding.
- 1.12 For the avoidance of doubt, references throughout this IM to ComReg exercising its discretion mean ComReg acting reasonably and in accordance with its statutory functions, objectives and duties.

## 1.2 The 26 GHz Band

- 1.13 The entire 26 GHz band constitutes 3 300 MHz of radio frequency spectrum in the range 24.250 – 27.550 GHz. In the EU, the entire band is allocated for fixed and mobile use on a primary basis. In Ireland, it is also allocated for short range devices (“Automotive Short Range Radar” and “Industrial Probing Radar”) on a secondary, licence exempt basis.
- 1.14 In 2008, ComReg assigned 2 × 504 MHz of the 26 GHz band, in the ranges 24.773 – 25.277 GHz paired with 25.781 – 26.285 GHz, for Point-to-Point (“P2P”) or Point-to-Multipoint (“PMP”) applications on a national basis. The portion of the band was divided into 18 blocks of 2 × 28 MHz and ComReg assigned 10-year rights of use for those radio frequencies, through licences granted under s.i. 762/2007.
- 1.15 The current rights of use for radio frequencies in the 26 GHz band are used to provide five types of wireless electronic communications service, three on a primary basis and two on a secondary basis
- 1.16 The primary, licensed uses are:
- Fixed Wireless Access Local Area (FWALA) (24.605 – 25.753 GHz)
  - Fixed National P2P and PMP links (24.745 – 26.285 GHz)
  - Fixed Individual P2P links (25.277 – 26.453 GHz)

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<sup>4</sup> European Communities (Electronic Communications Networks and Services) (Authorisation) Regulations 2011 (s.i. 335/2011). Regulation 4(1) therein states “*Subject to paragraph (7), any undertaking that intends to provide an electronic communications network or an electronic communications service shall, before doing so, notify the Regulator of its intention to provide such a network or service.*”

1.17 The secondary, licence-exempt uses are:

- Automotive Short Range Radar (21.65 – 26.65 GHz)
- Industrial Probing Radar (24.65 GHz – 25.5 GHz)

### 1.3 Structure of Information Memorandum

1.18 The remainder of this IM is structured as follows:

- **Chapter 2** details the Award Spectrum, the Lots included in the Award Process, and the terms and conditions of 26 GHz Licences that may be awarded through this Award Process;
- **Chapter 3** details the various stages of the Award Process, the timelines for the Award Process and the Award Rules;
- **Chapter 4** provides additional details on the legal terms and conditions that are applicable to this Award Process;
- **Annexes:**
  1. Glossary
  2. Draft Regulations;
  3. Application Form;
  4. Example of Winner and Base Price Determination
  5. Example of Assignment Stage Winner Determination and Pricing
  6. Relationship resolution of Bidder connections, exemptions and changes.
  7. Determination of Winning Bids and Base Prices in the Assessment Stage.

1.19 In anticipation of receiving correspondence on matters relating to the draft IM, ComReg hereby gives notice that it will publish all material correspondence received in this regard. Such information will be subject to the provisions of ComReg's guidelines on the treatment of confidential information.<sup>5</sup>

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<sup>5</sup> Guidelines on the treatment of confidential information, ComReg Document 05/24

## Chapter 2

# 2 Licences and Award Spectrum

### 2.1 Introduction

- 2.1 Under this Award Process, ComReg will assign new rights of use for 2 x 532 MHz of radio frequency spectrum in the ranges 24.745 – 25.277 GHz paired with 25.753 – 26.285 GHz (the “Award Spectrum”). All further references to the “26 GHz band” in this IM are, unless otherwise indicated or the context so implies, references to the Award Spectrum.
- 2.2 ComReg will assign the Award Spectrum through Licences granted to Winning Bidders under Section 5 of the Wireless Telegraphy Act 1926 (“1926 Act”). The Licences will be governed by the P2P Regulations made by ComReg under Section 6 of the 1926 Act (subject to the consent of the Minister for Communications Climate Action and Environment).
- 2.3 The Licences will permit holders of same (“Licensees”) to keep, possess, install, maintain, work and use “apparatus for wireless telegraphy” (“Apparatus”) for the purpose of operating Point-to-Point (“P2P”) links on a national, terrestrial basis.
- 2.4 The terms and conditions of the Licences are set out in this Chapter and in the P2P Regulations and the indicative Licence in Annex 2.
- 2.5 The Licences will all commence concurrently on such date as ComReg may specify having regard to, among other things, the conclusion of this Award Process. The Licences will all expire concurrently on the tenth anniversary of the Commencement Date.
- 2.6 The Award Spectrum consists of 19 separate Lots and the specific frequency assignment for each Lot is set out in Chapter 3 (Table 1) below.
- 2.7 There are currently twelve 2 x 28 MHz National Blocks assigned in the Award Spectrum for P2P use, split across four operators. An additional seven Blocks are currently unassigned. Table 1 below identifies the current holders of spectrum rights of use for each Block.

| A1         | A2         | A3         | A4         | A5    | A6    | A7    | A8    | A9    | A10 | A11 | A12        | A13             | A14      | A15      | A16      | A17      | A18        | A19        |
|------------|------------|------------|------------|-------|-------|-------|-------|-------|-----|-----|------------|-----------------|----------|----------|----------|----------|------------|------------|
| Unassigned | Unassigned | Unassigned | Unassigned | Three | Three | Three | Three | Three | BT  | BT  | Unassigned | Irish Broadband | Vodafone | Vodafone | Vodafone | Vodafone | Unassigned | Unassigned |

**Table 1: Current spectrum assignments in the Award Spectrum**

## 2.2 26 GHz Band Licence - Licence Conditions

- 2.8 Each Winning Bidder will be entitled to apply for a Licence.
- 2.9 Annex 2 sets out the draft P2P Regulations which would be made by ComReg under Section 6 of the 1926 Act, subject to Ministerial consent required under s.37 of the 2002 Act, and which would govern all Licences and would, amongst other things, specify licence duration, conditions, and fees.
- 2.10 This section describes the conditions that will attach to such Licences which are set out in the draft P2P Regulations and/or the Licences themselves.

### 2.2.1 Entitlement to apply for a 26 GHz National Block Licence

- 2.11 In accordance with the rules for the Notification and Grant Stage (as discussed in Section 3.8 of this IM), Winning Bidders will be entitled to apply for a Licence.

### 2.2.2 Scope

- 2.12 A Licence will permit a Licensee to keep, possess, install, maintain, work and use Apparatus in the portion of the 26 GHz Band assigned thereunder and for the purpose of operating P2P radio communications links. All Apparatus must comply with the conditions of the applicable Licence as set out in the P2P Regulations.
- 2.13 Licences will be “non-exclusive” meaning that ComReg may permit persons other than the Licensees to keep, possess, install, maintain, work and use Apparatus in the portion of the 26 GHz Band assigned to the Licensees, though only on a “non-interference and non-protected basis”.<sup>6</sup> Permitted secondary, licence-exempt uses shall include:
- Automotive Short Range Radar (21.65 – 26.65 GHz); and
  - Industrial Probing Radar (24.05 GHz – 26.5 GHz)

### 2.2.3 Licence Conditions

- 2.14 This section describes the enforceable conditions that shall attach to all Licences. This section also specifies certain things that Licensees will not be permitted to do.

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<sup>6</sup> “on a non-interference and non-protected basis” means (a) use of any licence-exempt Apparatus is dependent on no Harmful Interference being caused to any lawful radio communications, and (b) no claim may be made for protection of the licence-exempt Apparatus against any Harmful Interference originating from other radio communications.

## **Duration**

- 2.15 The Licences will be of ten years duration. All Licences will commence concurrently on such “Commencement Date” as ComReg may specify having regard to, amongst other things, the conclusion of this Award Process and they will all expire concurrently on the tenth anniversary of the Commencement Date. The associated rights of use for radio frequencies in the 26 GHz band will commence and expire on these same dates.
- 2.16 There is no express or implied right of renewal, extension or any other form of prolongation of a Licence, or of the rights of use for radio frequencies assigned thereunder, beyond the expiry date of same.

## **Potential for delayed commencement of 26 GHz Licences**

- 2.17 Circumstances beyond ComReg’s reasonable control could result in some or all Licences not coming into effect by the intended Commencement Date.. All Applicants and Bidders shall be deemed to have acknowledged and accepted the possibility of such delay. Licence fees will be refunded to Winning Bidders in the event of any such delay, on a proportionate basis relative to the length of the delay.
- 2.18 To the extent permitted by law, ComReg’s aggregate liability for all loss or damage of any nature, as may arise from any delay in the commencement of any or all Licences, shall be expressly limited to the refund of Licence fees, again on a proportionate basis relative to the length of the delay, and Applicants and Bidders shall be deemed to have acknowledged and agreed to same.

## **Point-to-Point use**

- 2.19 Licences will permit Licensees to keep, possess, install, maintain, work and use Apparatus for the purpose of operating P2P radio communications links only.
- 2.20 Licences will not permit Licensees to keep, possess, install, maintain, work and use Apparatus for the purpose of operating Point-to-Multipoint (PMP) radio communications links.

## **Duplex arrangements**

- 2.21 Licences will permit Licensees to keep, possess, install, maintain, work and use Apparatus using “Frequency division duplexing” (FDD)<sup>7</sup>.

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<sup>7</sup> “FDD” describes a full-duplex communications link that uses two different radio frequencies for transmitter and receiver operation. The transmit direction and receive direction frequencies are separated by a defined frequency offset.

2.22 Licences will not permit Licensees to keep, possess of, install, maintain, work or use Apparatus using “Time division duplexing” (TDD).<sup>8</sup>

### **Guard bands**

2.23 There will be no licence conditions that create or mandate guard bands between adjacent Licences. Bidders should therefore identify any guard band requirements that their choice of technology may require and should bid for a sufficient number of Lots to meet those requirements.

### **EiRP, ATPC & ACM**

2.24 A Licensee, in keeping, possessing, installing, maintaining, working and/or using all Apparatus, shall be required to use:

- the minimum EiRP (Equivalent Isotropic Radiated Power)<sup>9</sup> necessary to obtain the level of service and availability; and
- Automatic Transmitter Power Control (ATPC)<sup>10</sup>.

### **Site registration and information**

2.25 A Licensee shall be required to register the name and co-ordinates (easting/northing) of each of its P2P sites with ComReg, through ComReg’s online registration system, to include specifying whether each registered site is “transmit high” or “transmit low”.

2.26 A Licensee shall also be required to submit to ComReg, annually and in aggregate form, the following information in respect of all Apparatus deployed at its P2P sites:

- Transmit Frequency
- Receive Frequency
- Channel Number

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<sup>8</sup> “TDD” is a method for emulating full-duplex communication over a half-duplex communication link. The transmitter and receiver both use the same frequency but transmit and receive traffic is switched in time.

<sup>9</sup> The product of the power supplied to the antenna and the antenna gain  $G_i$  in a given direction relative to an isotropic antenna (absolute or isotropic gain) (ITU Radio Regulations, No. 1.161). The idealized reference antenna, when fed with a power of 1 kW, is considered to provide an EIRP of 1 kW in all directions and to produce a field strength of 173 mV/m at 1 km distance.

<sup>10</sup> Automatic Transmit Power Control (ATPC) - is a feature of microwave radio links that adjusts the transmitter output power based on the varying signal level at the receiver. ATPC makes for more efficient operation of links as it allows the transmitter to operate at reduced power where possible. Typically, when fading occurs on the link the transmit power will be increased incrementally until the link budget is satisfied or the maximum transmit power is reached.

- Channel Bandwidth

- 2.27 Any P2P site which is not registered, or in respect of which required information as specified above has not been provided within the set time period, shall be deemed not to be licensed under the 1926 Act. ComReg, in such circumstances, shall reserve its right to take such measure within its statutory powers as it considers appropriate.<sup>11</sup>
- 2.28 Part 2 of a Licence details all Apparatus to which the Licence relates and its location(s).
- 2.29 Each Licensee shall be required to submit up to date information to ComReg in respect of Part 2 of its Licence, in advance of the licence's Commencement Date and on or before each anniversary of said Commencement Date for each year that the Licence is in force.
- 2.30 ComReg will publish details of all Licences which it grants, including information contained in Part 2, on its website, subject to its assessment of confidential information in line with ComReg Document 05/24.

### **Spectrum hoarding**

- 2.31 ComReg will not attach any conditions to Licences for the purpose of preventing spectrum hoarding (see Regulation 17(10) of the Framework Regulations). However, ComReg reserves the right to attach any such condition(s) in future, as considered necessary and proportionate, and Licensees that become subject to any such conditions will be required to comply with same.

### **Payment of fees**

- 2.32 It will be a condition of any Licence that the Licensee shall make payment of all fees as detailed in this IM, the P2P Regulations, and in the Licence itself.

### **Radio Equipment Regulations**

- 2.33 All radio equipment placed on the Irish market or put into service after 13 June 2017 must comply with the Radio Equipment Directive (2014/53/EU) as transposed into Irish law as the European Union (Radio Equipment) Regulations 2017<sup>12</sup> ("Radio Equipment Directive"). It is a function of ComReg to ensure compliance with the Radio Equipment Directive. This includes defining the

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<sup>11</sup> Such measures may include the seizure without prior notice of any such unlicensed (and thus unlawful) Apparatus.

<sup>12</sup> S.I. No. 248/2017, giving effect to Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 and to Regulation (EC) No 765/2008 of 9 July 2008.

regulated interface requirements for radio services in Ireland, including for the 26 GHz Band, and these interfaces are set out in Document 06/47R.<sup>13</sup>

2.34 It shall be a condition of all Licences that Licensees shall ensure that:

- Apparatus complies with relevant radio interface specifications set out in Document 06/47R, as may be amended from time to time.
- All antennas for P2P links be of at least ‘class 3’ standard as defined by European Harmonised Standard ETSI EN302 217-2.<sup>14</sup>
- Apparatus, or any part thereof, complies with the Radio Equipment Directive with Licensees having a particular duty to ensure that:
  - any electromagnetic disturbance generated by any Apparatus does not exceed the level above which it may cause interference with any other lawful radio and telecommunications equipment or apparatus for wireless telegraphy; and
  - any radio and telecommunications equipment or other apparatus for wireless telegraphy supplied by a Licensee, or any installations constructed by a Licensee, shall be appropriately immune to electromagnetic interference.

## 2.2.4 Fees

2.35 Licences, together with all rights of use for radio frequencies in the 26 GHz band assigned thereunder, will be granted on foot of the Award Process described in Chapter 3. The total fees that will apply to each Licence shall consist of:

- (i). a once-off **Spectrum Access Fee (“SAF”)** paid by a Winning Bidder at the conclusion of the Award Process and prior to the initial granting of its Licence; and
- (ii). an annual **Spectrum Usage Fee (“SUF”)** first paid by a Winning Bidder at the conclusion of the Award Process and prior to the initial granting of its Licence and thereafter paid on or before each anniversary of the Commencement Date of the Licence.<sup>15</sup>

2.36 Licences granted out of this Award Process will not be subject to Value Added Tax (“VAT”) and so all Fees set out herein and in related documents do not

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<sup>13</sup> Interface Requirements for Radio Services in Ireland – ComReg Document 06/47R.

<sup>14</sup> Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 2: Digital systems operating in frequency bands from 1,3 GHz to 86 GHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

<sup>15</sup> For any Licence that remains in effect for its full 10 year duration, 10 SUFs shall be payable by the Winning Bidder / Licensee concerned and the SUFs shall be of equal amounts save that each SUF shall be index-linked to the Consumer Price Index.

include VAT. If the VAT rules should change over the duration of the Licences, so as to require the application of VAT to such Fees, then VAT would be applied as appropriate.

## Upfront Fee

2.37 The Upfront Fee payable by a Winning Bidder for its Licence is equal to the Spectrum Access Fee (SAF) and shall comprise:

- the **Base Price** associated with the Winning Bid for that Winning Bidder, payable for winning frequency-generic Lots won in the Assessment Stage); and
- the **Additional Price** if any, payable by that Winning Bidder for the assignment of specific frequencies as a result of the Assignment Stage..

2.38 The Base Price will be at least the sum of the Reserve Prices for all frequency-generic Lots awarded to the Winning Bidder and will be no greater than the Bid Amount specified by the Winning Bidder in its Winning Bid. The Base Price to be paid by each Winning Bidder will be established using the methodology set out in Section 3.6.2.

2.39 The Additional Price for a Winning Bidder is the price for any specific Lots assigned to the Winning Bidder, as determined in the Assignment Stage of the Award Process. The Additional Price will be determined using the methodology set out in Section 3.7.5 and will be no greater than the Assignment Bid Amount submitted by the Winning Bidder for the specific Lots in the Assignment Stage.

2.40 The Reserve Price per Lot is €70,000 (seventy thousand Euro).

## Spectrum Usage Fees

2.41 For any Licence, the first SUF will be payable at the conclusion of the Award Process and prior to the initial granting of the Licence and each subsequent SUFs will be payable annually thereafter, prior to each anniversary of the Commencement Date of the Licence. All SUFs will be index-linked to the Consumer Price Index<sup>16</sup> (“CPI”) published by the Central Statistics Office<sup>17</sup> of Ireland (or its successor). As the CPI may vary over time, a SUF may increase or decrease over the duration of a Licence (“CPI Adjustment”). For the avoidance of doubt, a total of 10 SUFs will be payable for each Licence that runs its full 10-year duration.

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<sup>16</sup> If the CPI data ceases to be published or if the method of its calculation changes fundamentally, ComReg reserves the right to select another appropriate index and to amend the method of calculating indexing accordingly.

<sup>17</sup> See [www.cso.ie](http://www.cso.ie).

- 2.42 The SUFs for a Licence shall be the sum of the SUFs for each Lot included in that Licence. For each Lot included in a Licence, the SUF for a one (1) year Licence period is €25k per Lot plus the “CPI Adjustment”.
- 2.43 The CPI Adjustment for a SUF shall be calculated using the month of the Commencement Date as the common base date for the CPI (i.e. CPI = 100). ComReg will also use the most current CPI data available to it at that time. For example, for a SUF payable in July, ComReg envisages that the most up to date CPI data available is likely to be from April of that year.

### **Arrangements for paying fees**

- 2.44 All fees for Licences shall be paid into ComReg’s Bank Account. Details are set out in the Application Form in Annex 3.
- 2.45 Where the due date for payment of a fee is not a Working Day, payment shall be made on or before the Working Day immediately preceding that due date.
- 2.46 A Winning Bidder who fails to pay a SAF or first SUF by the applicable due date or dates may forfeit its Deposit and its entitlements to be granted the Licence concerned – see Section 3.8. Any such forfeiture of a Deposit or non-granting of a Licence will not prejudice ComReg’s entitlement to recover the full amount of the SAF and/or first SUF as a simple contract debt.
- 2.47 A Licensee who has been granted a Licence but who subsequently fails to pay any SUF on or before its due date will have failed to comply with a Licence condition and ComReg, in such circumstances, may take such actions as it considers appropriate including the following:
- ComReg may seek to recover the amount due as a simple contract debt in any civil court of competent jurisdiction; and/or
  - ComReg may take such enforcement action as it considers appropriate. Interested parties should note, in this regard, that if a SUF is not paid on or before its due date then the associated Licence shall be deemed not to have been granted and not to be in effect. This means that any Apparatus, which would have been licensed had the SUF been paid, shall be deemed to be unlicensed for so long as the SUF remains unpaid, and the possession and/or use of any such unlicensed Apparatus shall be an offence.
- 2.48 A Licensee shall pay interest on any fee or part thereof that has not been paid by its due date and is outstanding. The applicable interest rate shall be that which applies to late payments in commercial transactions under the European Communities (Late Payment in Commercial Transactions) Regulations 2012 (S.I. No. 580/2012). The applicable time period for any interest payment shall

run from the date on which the full / partial fee fell due to the date on which the full / partial fee is paid.

## 2.2.5 Refund or adjustment of portion of a fee

2.49 ComReg may adjust or refund an appropriate portion of any fee paid or payable by a Winning Bidder for its Licence, where the Commencement Date of the Licence has been delayed or the commencement date of any Lot assigned under the Licence has been delayed. Any refund or adjustment will be calculated a pro rata basis as follows:

- (a) ComReg will adjust or refund a portion of any SAF and/or SUF<sup>18</sup> for each whole day in which:
- (i). the Commencement Date of the Licence concerned is delayed, or
  - (ii). the commencement date of any Lot assigned under the Licence concerned is delayed.

whichever may be applicable.

2.50 ComReg will retain any Upfront Fee already paid by a Winning Bidder in the bank account specified in Part 3 of the Application Form.<sup>19</sup> ComReg will pay a refund in respect of any delayed Licence / Lot to the Winning Bidder concerned within 5 Working Days of the end of the month to which the refund applies, or, if the Winning Bidder so wishes, a refund may be offset against the following year's SUF (or against SUFs over multiple years).

2.51 For the avoidance of doubt:

- no refund of any SAF or SUF shall be payable to any Winning Bidder for any delay in the availability of a Licence / Lot that is caused by an act or omission that is attributable, in whole or in part, to that Winning Bidder or to any employee, servant, supplier, or other agent of that Winning Bidder;
- in submitting an Application, an Applicant agrees that if it should become a Winning Bidder then any failure by it to obtain any or all required consents or approvals, or to obtain any or all Apparatus or funding necessary to deploy a network or to complete its Transition Activities, shall be deemed to be an omission on behalf of that Winning Bidder; and
- to the extent permitted by law, ComReg's liability for damage or loss of any nature arising from any delayed access to any Lot is expressly limited

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<sup>18</sup> ComReg does not envisage a requirement to refund SUF payments for delayed Lot(s), as no SUF payments will be requested by ComReg for delayed Lot(s) until such time as ComReg notifies the Winning Bidder of the commencement date of these Lots.

<sup>19</sup> However, ComReg reserves the right to manage all monies held in accordance with good treasury management.

to refunds or adjustments to applicable fees identified above and, in submitting an Application, an Applicant agrees to same.

### **Other refunds of Licence Fees**

2.52 Where a Licensee requests an amendment to its Licence which is acceded to by ComReg and which results in a reduction in the:

- quantum of spectrum held under the Licence<sup>20</sup>, or
- the duration of one or more Lots held under Licence,

the Licensee shall not be entitled to any refund of the applicable SAF but shall be entitled to a refund in respect of the excess of any SUF that it has already paid.

2.53 A Licensee will not be liable for any future SUFs for surrendered Lots, beyond the new expiry date of those Lots under its amended Licence.

2.54 Where a Licence is amended, surrendered, or withdrawn following an enforcement action by ComReg, ComReg will not refund any fees (SAF or SUFs) already paid by the Licensee concerned in respect of such Licence.

### **2.2.6 Enforcement Actions – Compliance with Licence Conditions, Licence Suspension, Licence Withdrawal**

2.55 ComReg shall enforce conditions attaching to Licences in accordance with its statutory powers, including those set out in the Authorisation Regulations.

2.56 A Licence may be suspended or withdrawn in accordance with the Authorisation Regulations.

2.57 If enforcement action by ComReg results in the suspension, withdrawal, or foreshortening of a Licence or part thereof, ComReg will not refund any fees (SAF or SUFs) already paid by the Licensee concerned in respect of such Licence.

### **2.2.7 Amending a Licence**

2.58 ComReg may amend any of the rights, obligations, conditions, and procedures relating to a Licence, from time to time and in accordance with the Authorisation Regulations.

### **2.2.8 Draft Regulations and Indicative Licence**

2.59 An indicative Licence is set out in Schedule 1 to the Draft Regulations:

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<sup>20</sup> i.e. a reduction in the Licensee's assigned quantum of rights of use in the 26 GHz Band.

- Part 1 sets out a Licence commencement and expiry date;
- Parts 2 and 3 specify the Apparatus which the Licensee is permitted to keep, possess, install, maintain, work and use and the location and details of same; and
- Part 4 sets out other Licence conditions.

## **2.2.9 Other Considerations**

### **Collaboration agreements between wireless operators**

2.60 ComReg's most recent consideration of the issues associated with potential collaboration agreements between wireless operators (such as spectrum pooling, spectrum sharing and network sharing) is set out in Section 7.4.2 of its Radio Spectrum Management Strategy - 2016 to 2018 (Document 16/50).

## Chapter 3

# 3 The Award Process

- 3.1 This chapter describes the various stages of the Award Process.
- 3.2 All references in this IM to ComReg exercising its discretion mean ComReg exercising its discretion reasonably and in accordance with its statutory functions, objectives, and duties.

## 3.1 Lots Available

- 3.3 The available spectrum rights of use in the 26 GHz band will be awarded on a national basis using a FDD band plan in 2 x 28 MHz blocks. A total of 19 (2 x 28 MHz) Lots will be available, as set out in Table 2.

| Lot | Downlink Frequency Range | Uplink Frequency Range |
|-----|--------------------------|------------------------|
| A1  | 24.745 - 24.773 GHz      | 25.753 – 25.781 GHz    |
| A2  | 24.773 - 24.801 GHz      | 25.781 - 25.809 GHz    |
| A3  | 24.801 - 24.829 GHz      | 25.809 - 25.837 GHz    |
| A4  | 24.829 - 24.857 GHz      | 25.837 - 25.865 GHz    |
| A5  | 24.857 - 24.885 GHz      | 25.865 - 25.893 GHz    |
| A6  | 24.885 - 24.913 GHz      | 25.893 - 25.921 GHz    |
| A7  | 24.913 - 24.941 GHz      | 25.921 - 25.949 GHz    |
| A8  | 24.941 - 24.969 GHz      | 25.949 - 25.977 GHz    |
| A9  | 24.969 - 24.997 GHz      | 25.977 - 26.005 GHz    |
| A10 | 24.997 - 25.025 GHz      | 26.005 - 26.033 GHz    |
| A11 | 25.025 - 25.053 GHz      | 26.033 - 26.061 GHz    |
| A12 | 25.053 - 25.081 GHz      | 26.061 - 26.089 GHz    |
| A13 | 25.081 - 25.109 GHz      | 26.089 - 26.117 GHz    |
| A14 | 25.109 - 25.137 GHz      | 26.117 - 26.145 GHz    |
| A15 | 25.137 - 25.165 GHz      | 26.145 - 26.173 GHz    |
| A16 | 25.165 - 25.193 GHz      | 26.173 - 26.201 GHz    |
| A17 | 25.193 - 25.221 GHz      | 26.201 - 26.229 GHz    |
| A18 | 25.221 - 25.249 GHz      | 26.229 - 26.257 GHz    |
| A19 | 25.249 - 25.277 GHz      | 26.257 - 26.285 GHz    |

**Table 2: Lots available to any party participating in the Award Process**

- 3.4 Each Lot will come into operation on the Commencement Date of the Licence concerned and will remain in operation for the duration of that Licence, up to a maximum term of 10 years.

- 3.5 A Reserve Price<sup>21</sup> of €70,000 and annual SUFs of €25,000 (index-linked to the CPI) will apply to each Lot.
- 3.6 All Lots will first be assigned on a frequency-generic basis in the Assessment Stage. This assignment will be established on the basis of the Bids for different numbers of frequency-generic Lots submitted by Applicants in the Application Stage. The specific frequencies assigned to winners of frequency-generic Lots (Winning Bidders) will subsequently be decided in a separate Assignment Stage.

### 3.2 Competition caps

- 3.7 A Competition Cap of five 2 × 28 MHz Lots will apply for every Bidder and each Bid must be in accordance with this Competition Cap.

### 3.3 Process Overview and Timeline

- 3.8 The Award Process will comprise the following stages:
- (i) **Application Stage** - Applicants may submit Applications to ComReg to participate in the Award Process. An Application must include all of the Bids which the Applicant wishes to submit for packages of frequency-generic Lots. Further details on the Application Stage are in Section 3.4.
  - (ii) **Qualification Stage** - ComReg will examine all Applications received to determine which Applicants are qualified to participate in the Award Process. A qualified Applicant will thereafter be referred to as a Bidder. Further details on the Qualification Stage are in Section 3.5.
  - (iii) **Assessment Stage** - ComReg will determine the Winning Bids and Winning Bidders and the frequency-generic Lot(s) to be assigned to each Winning Bidder, based on all valid Bids received in the Application Stage. ComReg will also determine the price to be paid by each Winning Bidder, i.e. the Base Price for each Winning Bidder, using a Second-Price rule. Further details on the Assessment Stage are in Section 3.6.
  - (iv) **Assignment Stage** - ComReg will determine the specific frequencies to be assigned to each Winning Bidder, in accordance with the outcome of the Assessment Stage, and the Additional Price to be paid by each Winning Bidder (i.e. the price a Winning Bidder must pay to be assigned

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<sup>21</sup> Licences are awarded subject to payment of the Upfront Fee determined by the Award Process and the first SUF payment. The Reserve Price indicates the minimum SAF for each Lot included in the Licence and does not include any subsequent payment of SUFs.

specific frequencies that were determined during the Assignment Stage). Further details on the Assignment Stage are in Section 3.7.

- (v) **Notification and Grant Stage** - ComReg will notify the Winning Bidders of their entitlement to apply for and be granted a Licence in accordance with the outcome of the Award Process, subject to certain conditions including the payment of fees. Further details on the Notification and Grant Stage are in Section 3.8.

3.9 The indicative timeline for the Award Process is set out in Table 3 below:

| Stage               | Milestone   | Timeline                                     |
|---------------------|---|--|
| Application Stage   | Publication of final Information Memorandum on ComReg's website   | Friday 27 April 2018                         |
|                     | Deadline for submission of questions regarding the Award Process  | 16:00 hours on Tuesday 8 May 2018            |
|                     | Final date for responses to questions on the Award Process to be published on comreg.ie                     | Monday 14 May 2018                           |
|                     | Deadline for submission of Application Forms  | 16:00 hours on Monday 21 May 2018            |
|                     | Deadline for submission of Deposits   | 23:59 hours on Monday 21 May 2018            |
|                     | Restrictions on Award-related communications come into effect   | On submission of first application to ComReg |
| Qualification Stage | Each Applicant to be informed whether it has become a Bidder  | Tuesday 5 June 2018                          |
|                     | Return of Deposits to Applicants who have not become Bidders  | Tuesday 12 June 2018                         |
| Assessment Stage    | Determine the number of frequency-generic Lots to be assigned to each Bidder and the Base Prices to be paid | Thursday 7 June 2018                         |

**Table 3: Timetable for the Award Process**

3.10 ComReg is currently not in a position to announce with certainty the timing of the later stages of the Award Process (i.e. the Assignment Stage and the Notification and Grant Stage) as these will depend on the outcome of earlier stages in the Award Process and/or circumstances outside ComReg's control.

3.11 ComReg will provide further information on the timing of these later stages to the appropriate parties (e.g. Bidders, Winning Bidders, etc.) during the course of the Award Process. The timelines for these later stages will be in accordance with the provisions of this IM which, amongst other things, provides that:

- The Assignment Round may commence if all Winning Bidders have returned valid Assignments Bids before the specified deadline for receipt of Assignment Bids<sup>22</sup> (see Section 3.7.3); and
- Following the submission of Assignment Bids and prior to notifying Winning Bidders of the outcome of the Assignment Round, ComReg may notify any Winning Bidder that it must increase its Deposit to an amount specified by ComReg (see Section 3.7.4).

3.12 ComReg reserves the right to vary the indicative timelines as may be necessary to take account of any changed or unforeseen circumstances. ComReg will give appropriate notice of any variation to a timeline by issuing a public notice on its website or, depending on the stage of the Award Process, by notifying the affected parties (i.e. Applicants or Bidders).

3.13 An Applicant is strictly prohibited:

- from engaging in any form of direct or indirect cooperation or collusive behaviour, of any kind whatsoever, with any other Applicant or with any stakeholder or third party, as would or could influence the Award Process or the outcome of the Award Process;
- prior to and following the Application Stage, from making any public announcement, of any kind whatsoever, concerning its potential or actual participation in the Award Process, including any announcement as to the fact that the Applicant may be, or is, participating in the Award Process or relating to the Applicant's Bids or bidding strategies or any other aspect of the Applicant's participation in the Award Process; and
- prior to and following the Application Stage, from directly or indirectly disclosing any information to any other Applicant, stakeholder or third party, including any disclosure as to the fact that the Applicant may be, or is, participating in the Award Process or relating to the Applicant's Bids or bidding strategies or any other aspect of the Applicant's participation in the Award Process;

3.14 An Applicant who breaches any Award Rule may be excluded from the Award Process, depending on the severity of the breach. All decisions, as to whether

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<sup>22</sup> If a Winning Bidder fails to submit a valid Assignment Bids Form within the set deadline, it will be deemed to have submitted Assignment Bids of zero EURO (€0.00) for all of its Assignment Options.

there has been a breach and as to the severity of any breach and as to the consequences for any such breach, shall be made by ComReg and shall be final.

3.15 An Applicant excluded from the Award Process for having breached one or more of the Award Rules:

- will remain liable for its Bids and for full payment to ComReg of any fees which the Applicant would have paid had it remained in the Award Process and become a Winning Bidder; but
- will not be granted any of the rights of use for radio frequencies in the 26 GHz band which it otherwise would have acquired, had it remained in the Award Process and become a Winning Bidder.

3.16 ComReg, at its sole discretion, may decide to void the Bid/s of any Applicant who has been excluded from the Award Process. A voiding of any Bid may require a re-calculation of Winning Bids and Winning Prices.

### 3.4 Application Stage

3.17 The Award Process begins on the date of publication of this IM.

3.18 The deadline for all Interested Parties to submit their Applications to participate in the Award Process is **16:00 on Monday 21 May 2018** (the “**Application Date**”). All references to a specific time of day in this IM are to Irish time.

3.19 A submitted Application, in order to be deemed valid and complete, must include the following:

- completed Application Form;<sup>23</sup>
- cleared monetary Deposit; and
- documentation required to be annexed to the Application Form.

3.20 An interested party who submits an Application to ComReg is thereafter referred to as an Applicant.

3.21 An Applicant who submits a valid and complete Application shall be eligible to participate in the Award Process.

### Questions

3.22 Interested Parties may submit questions on the Award Process and Award Rules. The deadline for submitting questions is **16:00 on Tuesday 8 May 2018**. ComReg will acknowledge receipt of all questions and all questions received

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<sup>23</sup> See Annex 3.

prior to the deadline will be replied to on an ongoing basis and, where possible, within 10 Working Days.

3.23 Questions must be delivered by hand or courier to ComReg's offices and addressed as follows:

**Mr Jack O'Dwyer (RE: 26 GHz Award Process)  
Commission for Communications Regulation  
One Dockland Central  
Guild Street  
Dublin 1  
Ireland  
D01 E4X0**

3.24 Interested Parties may **not** submit Questions in any electronic format.

3.25 ComReg will publish all questions and its responses to same no later than **16:00 on Monday 14 May 2018**, on an anonymised basis and subject to protecting any confidential information therein in accordance with ComReg's guidelines on the treatment of confidential information.<sup>24</sup>

3.26 Interested Parties are responsible for the submission of their questions, including the anonymity of same. Therefore, any Interested Party who submits a question or questions should ensure that the sealed envelope containing same does not bear any mark, of any kind whatsoever, as could identify that Interested Party. Interested Parties are required to identify themselves on the question sheet within the sealed envelope.

3.27 ComReg reserves its right, where appropriate, to amend any previous responses to questions made by it up until **16:00 on Monday 14 May 2018**, such that responses made before this date are for general guidance only and should not be considered as final, or be relied upon, until after **16:00 on Monday 14 May 2018**.

### **3.4.1 Application Form and Supporting Documents**

3.28 Each Applicant must complete and sign the Application Form in Annex 3

3.29 Each prospective Applicant may submit one Application Form only.

3.30 The Application Form consists of three parts:

- Part 1: **Administrative Information.**

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<sup>24</sup> ComReg Doc 05/24

- Part 2: **Applicant Declaration.**
  - Part 3: **Lot Application Form.**
- 3.31 Once a prospective Applicant has submitted an Application Form, the Applicant will not be permitted to revise or withdraw any of the Bids specified in its Lot Application Form, add any Bids to the list of Bids submitted, or revise any other documents included in its Application Form (unless the prospective Applicant is required to do so by ComReg).
- 3.32 In completing Part 1 of the Application Form, titled “Administrative Information”, an Applicant must also submit appropriate evidence that all persons who sign the Application Form (“Authorised Agents”) are duly authorised by the Applicant to do so. Appropriate evidence in this regard would include:
- where an Applicant is incorporated in the European Union, evidence that the Authorised Agent/s is/are registered pursuant to the appropriate national implementing measures transposing Article 9 of the First Company Law Directive <sup>25</sup> (regulation 6 of S.I. 163/1973, in Ireland);
  - a board resolution from an Applicant which is a company registered in Ireland;
  - an irrevocable power of attorney; or
  - equivalent evidence for any Applicant from outside Ireland supported by a legal opinion from a law firm in the Applicant’s jurisdiction carrying in excess of €20,000,000 in professional indemnity insurance, addressed to ComReg and certifying that the Authorised Agent/s is/are entitled to bind the Applicant contractually.
- 3.33 The ‘Applicant Declaration’ in Part 2 of the Application Form must be signed by the Applicant or by a person duly authorised to sign the Declaration Form on behalf of the Applicant and the Applicant, in signing and submitting the Applicant Declaration in Part 2 of the Application Form, agrees to be bound by the Award Rules set out in this IM, including but not limited to the rules relating to agreements with third parties, confidentiality, and Bidder behaviour.<sup>26</sup>
- 3.34 Part 3 of the Application Form, entitled "**Lot Application Form**", should be used by an Applicant to specify all Bids which the Applicant wishes to submit for different quantities of frequency-generic Lots.
- 3.35 A **Bid** is a binding offer to buy a specified number of frequency-generic Lots for a specified monetary amount (the Bid Amount). An Applicant may submit multiple Bids. In each of its Bids an Applicant may apply for a different number

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<sup>25</sup> Directive 68/151/EEC.

<sup>26</sup> Which apply in addition to but without prejudice to Irish and EU competition law.

of Lots. The Lot Application Form lists all five possible packages (numbers of Lots) for which an Applicant may submit Bids (i.e. one, two, three, four, or five Lots) and provides fields for the Applicant to specify the corresponding Bid Amounts. An Applicant should specify, in the Lot Application Form, all Bids that it wishes ComReg to use when calculating the Winning Bids and Base Prices in the Assessment Stage. Details on how to complete the Lot Application Form are in Section 3.4.2.

- 3.36 For an Application to be valid, it must include information on the ownership structure of the Applicant (“**Ownership Structure Document**”). In the Ownership Structure Document an Applicant is required to do three things:
- (a) certify to the best of its knowledge that the Ownership Structure Document is a detailed, complete and clear overview of its ownership structure;
  - (b) certify that the Applicant’s ownership structure complies with the rules set out in Section 3.4.4; and
  - (c) list the Applicant’s Insiders (as the term is defined at Para 3.70).
- 3.37 If at any point during the Award Process a Bidder is found by ComReg to have submitted information on its ownership structure which is materially incomplete or incorrect, ComReg shall have the discretion to take whatever measures it deems appropriate, including requiring any Bidder to verify information already provided and/or to provide additional information and supporting evidence. If ComReg, on the basis of information provided to it, should be unable to determine, to its reasonable satisfaction, that two or more Bidders are not connected or associated (within the meaning of those terms as set out in Section 3.4.4) ComReg shall reserve the right to treat those Bidders as being connected or associated.
- 3.38 Applications are subject to Competition Caps (see Section 3.2) and, therefore, the Lot Application Form does not provide for packages of Lots that include in excess of five Lots. If a Lot Application Form is amended to specify a number of Lots which, if awarded, would exceed the Competition Caps, ComReg will notify the Applicant concerned and seek to have the Applicant amend its Lot Application Form. If ComReg is unable to resolve the issue in this manner, ComReg shall reject the Application on the basis that it is invalid and shall notify the Applicant concerned of its decision.
- 3.39 An Application Form that has been completed, signed, and submitted shall represent an unconditional offer by the Applicant concerned to buy the number of Lots specified in any one Bid made by the Applicant in its Lot Application Form, at a price not exceeding the Bid Amount corresponding to that Bid, and to pay the applicable SAF and all SUFs over the full term of the Licence.

3.40 In submitting its Application Form, an Applicant agrees to be bound by the terms and conditions of the Award Process as set out in this IM which, amongst other things, include the following:

- the Applicant acknowledges that the Commencement Date of a Licence, to be granted to the Applicant in its capacity as a Winning Bidder, may be delayed;
- the Applicant acknowledges that the commencement date of any Lot, assigned under the Licence to be granted to the Applicant in its capacity as a Winning Bidder, may be delayed;
- the Applicant, to the extent permitted by law, agrees that ComReg's aggregate liability for all losses or damages of any nature, resulting from any delay in the commencement date/s of any acquired Lot/s, is expressly limited to refunds or adjustments of the applicable Licence fees as set out in Section 2.2.5 of this IM; and
- the Applicant agrees that if it should become a Winning Bidder then its failure to obtain any consents, approvals, apparatus or funding necessary to deploy a network or complete Transitional Activities shall be deemed to be a breach of the Award Rules.

### **3.4.2 Completing the Lot Application Form**

3.41 Each Bid shall consist of:

- the package (number) of frequency-generic Lots that the Applicant seeks to acquire up to a maximum of 5 frequency-generic Lots; and
- a Bid Amount which is the price the Applicant is offering to pay for the specified package of frequency-generic Lots.

3.42 A Bid for a package of Lots will not be sub-divided by the Auctioneer and so a Bidder will only win the entire package of Lots which it has bid for, or else nothing. If an Applicant wishes to express its desire to acquire a different number of Lots, it will need to submit multiple Bids as part of its Application.

3.43 The Lot Application Form lists all five packages that an Applicant may bid for under the Award Rules, as well as the corresponding Reserve Price<sup>27</sup> (the minimum Bid Amount that can be submitted for that package) and fields for entering the corresponding Bid Amounts.

3.44 In order to submit a Bid for a number of frequency-generic Lots (from 1 to 5) the Applicant must specify a corresponding Bid Amount. This is the amount the

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<sup>27</sup> The Reserve Price for a Bid is calculated as the sum of Reserve Prices of all frequency-generic Lots included in the Bid.

Applicant is willing to pay to acquire the number of frequency-generic Lots specified in its Bid. A Bid will be classified as a Valid Bid if the Bid Amount is greater than or equal to the sum of the Reserve Prices of all Lots included in the Bid. ComReg will use only Valid Bids for calculating Winning Bids in the Assessment Stage. Where Valid Bids and invalid Bids are received, ComReg will assess the Lot Application Form in line with the assessment procedures described in Section 3.4.5.

- 3.45 Bid Amounts must be in whole Euros and specified on the Lot Application Form in both numerical form and written form. Where the numerical form and written form do not match, the written form will be used to determine Winning Bids and Base Prices.
- 3.46 All Bids must comply with the Competition Cap specified in Section 3.2.
- 3.47 An Applicant should specify all Bids that it wishes ComReg to use when calculating the Winning Bids and Base Prices in the Assessment Stage. Following submission of its Application, an Applicant cannot withdraw or amend any of its submitted Bids or submit any additional Bids.
- 3.48 Any Valid Bid submitted by an Applicant may be selected as a Winning Bid (provided the Applicant qualifies to become a Bidder in the Qualification Stage) in which case the Winning Bidder will be assigned the number of Lots specified in the Winning Bid for a price no greater than the Bid Amount specified in the Winning Bid. However, at most one Bid from each Applicant will be selected as a Winning Bid – therefore an Applicant shall only be liable to pay up to the maximum Bid Amount specified in any of its Bids.

### 3.4.3 Deposits

- 3.49 An Applicant must submit a monetary Deposit with its Application. The amount of the Deposit shall correspond to the largest Bid Amount (the sum of the Reserve Price plus any amount bid in excess of the Reserve Price) specified for any package for which the Applicant has bid, in its Lot Application Form.
- 3.50 All Deposits must be transferred to the bank account nominated by ComReg as specified in Annex 3 and must be received as cleared funds in that bank account<sup>28</sup> before **23:59 on 21 May 2018 (“the Application Date”)**.
- 3.51 Where any part of this IM indicates that:
- an Applicant or Bidder may in part or whole forfeit its Deposit; and/or

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<sup>28</sup> Bidders are cautioned to ensure that the cleared funds received by ComReg are required to be the amount of the Deposit specified in euro. Bidders should ensure that the amount of funds received by ComReg is not diminished by bank charges, exchange rate fluctuations or similar matters.

- ComReg may impose a sanction on an Applicant / Bidder that includes forfeiture of all or part of the Deposit paid by that Applicant / Bidder on Application,

ComReg will adopt a proportionate and fair approach taking into account its statutory objectives and the circumstances of each case (including the nature and seriousness of any breach or non-compliance resulting in forfeiture of all or part of the Deposit concerned).

#### **3.4.4 Ownership Rules**

3.52 All Applicants and Bidders are subject to the Ownership Rules from the dates of submission of Applications until the public announcement, by ComReg, of the outcome of the Award Process.

3.53 The Ownership Rules should help ensure that Bidders bid for (and if they are successful, win) Licences as independent entities and in accordance with applicable law. In particular, the Ownership Rules should ensure that the Competition Caps cannot be circumvented and prevent any Bidder from having any unfair advantage or from distorting competition within the Award Process, by being able to coordinate with any other Bidder.

3.54 In essence, the ownership rules require that no entity in a “Bidding Group” (that is, a Bidder and its Connected Persons) is connected to or associated with any entity in any other Bidding Group.

3.55 ComReg considers Bidders to be:

- “connected” if they have common or overlapping Bidding Groups; and
- “associated” if their Bidding Groups do not overlap but there is nonetheless a degree of common ownership between the Bidders.

3.56 The following Bidder relationships may not exist:

- a Bidder or Connected Person within one Bidding Group may not also be a Bidder or Connected Person within another Bidding Group;
- two or more Bidders may not be Associated Bidders.

3.57 Before submitting its Application, the Applicant concerned (potential Bidder) must take all reasonable measures to identify its Connected Persons, Associated Bidders and Insiders.

3.58 Annex 6 illustrates the types of relations that ComReg considers to fall within the concepts of Connected Persons and Associated Bidders (Insiders are discussed in the following section). If ComReg considers that one of the prohibited relations referred to above may exist, the procedure set out Annex 6. Annex 6 also describes circumstances in which ComReg may grant exemptions

from the Ownership Rules and the rules relating to restructuring and changes to ownership structure.

- 3.59 The rules set out above and in Annex 6 do not imply that ComReg has taken a position in this IM as to what Bidder connections, ownership structures, or associations may or may not be lawful or permitted under Irish or EU competition law. Such assessments fall outside the scope of this IM.

### **3.4.5 Confidential Information and Bidder behaviour**

- 3.60 This section sets out the rules that shall govern the behaviour of Applicants through the Award Process, from submission of Applications until the public announcement of the outcome of the Award Process by ComReg.<sup>29</sup> All Applicants are required to refrain from any action that could undermine the running of the Award Process or its results. The Award Rules include specific rules on treatment of Confidential Information and Bidder behaviour, restrictive practices capable of distorting the Award Process, and the behaviour of employees and legal entities that are related or connected to a Bidder.

- 3.61 For the avoidance of doubt, the rules set out in this IM are in addition to, and not in substitution for, Irish and EU competition laws which shall continue to apply to all Interested Parties, Applicants, and Bidders at all times, regardless of this Award Process.

- 3.62 An Applicant, in its Application, must confirm that it has complied, and will continue to comply at all times, with the Award Rules and that it has taken all reasonable measures to ensure that its Connected Persons, employees and Insiders<sup>30</sup> have likewise complied, and will continue to comply at all times, with the Award Rules.

- 3.63 If at any point it should become apparent that an Applicant or Bidder, and/or any Connected Person or Insider of an Applicant or Bidder, has failed to comply with the Award Rules, the Applicant or Bidder concerned will be deemed responsible for that breach and may, depending on the nature and seriousness of the breach, be excluded from the Award Process (which would include forfeiting all or part of its Deposit). In certain circumstances, ComReg may also suspend or withdraw a Licence granted to a Winning Bidder if, after the granting of the Licence, it should emerge that that Winning Bidder and/or any of its Connected Persons or Insiders breached the Award Rules.

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<sup>29</sup> Note that, in the case where a Bidder were to submit multiple Applications (in which case the last Application only would be considered by ComReg), the period from which the rules on Confidential Information would apply is from the submission of the first Application.

<sup>30</sup> See paragraph 3.70 for a definition of an Insider.

3.64 Applicants should note that even if they are unsuccessful in becoming Bidders they shall still remain bound by the Award Rules on release of Confidential Information until the result of the Award Process has been publicly announced by ComReg.

### **Confidential Information and Insiders**

3.65 The rules on Confidential Information in this section shall bind all Applicants and Bidders and shall apply from the Application Date, until ComReg has publicly announced the outcome of the Award Process.

3.66 Applicants who do not become Bidders shall nevertheless remain bound by the rules on Confidential Information until ComReg has publicly announced the outcome of the Award Process.

3.67 “**Confidential Information**” means any information not in the public domain which, if it became known to a Bidder, may influence the amount which that Bidder is willing to bid for Lots or the Bidder’s strategy in bidding for Lots. Confidential Information includes but is not limited to any information as to a Bidder’s:

- (i). Business case;
- (ii). Pre-Auction activities;
- (iii). Auction strategy;
- (iv). Authorised Agents’ identities;
- (v). Participation in the Award Process / Auction; and
- (vi). The composition and value of all Bids made by the Bidder in the Award Process

3.68 Confidential Information includes any information concerning the outcome of any stage of the Award Process, regardless of whether such information is specific to the Bidder.

3.69 Each Applicant must submit a list of its “Insiders” to ComReg, to be included in its Application, and an Applicant (or Bidder as the case may be) must inform ComReg thereafter of every change to its list of Insiders.

3.70 An “Insider” is any entity which has:

- received Confidential Information about a Bidder but is not a Connected Person;
- undertaken, wholly or partly, to finance or assist a member of a Bidding Group in connection with the Award Process; and/or
- has provided advice to the Bidder in formulating its Bid strategy and/or business case in connection with the Award Process.

- 3.71 An Insider can be a legal entity or a natural person. For example, an Insider can be a bank or other funder with knowledge of a Bidder's business case, valuations or Bid ceilings, or an Insider can be an auditor, consultant, lawyer, economic adviser or other professional assisting in the preparation of a Bid.
- 3.72 Except where acting in accordance with an exemption from the rules on common Insiders as described below, Bidding Groups and Insiders shall not convey Confidential Information to any other person, including any other Bidding Group or its Insiders, either by making such information public or by communicating such information to another Bidding Group or its Insiders, whether directly or indirectly through any intermediate.
- 3.73 It is possible that, at the Application Date, a Bidder may be unaware that it has a common Insider with another Bidder. If ComReg finds that two or more Bidders have a common Insider, it shall notify the Bidders concerned and shall:
- set a deadline for the Bidders concerned to apply for an exemption from the rules on common Insiders; or
  - require one or more of the Bidders concerned, as appropriate, to terminate its relationship with the common Insider insofar as the Award Process is concerned.
- 3.74 If the Bidders concerned are not granted an exemption by ComReg and/or if they do not alter the common Insider situation to ComReg's satisfaction, ComReg shall exclude all such Bidders from further participation in the Award Process. If the relationship comes to light later in the Award Process - for example, after the Assessment Stage has commenced - ComReg may exclude all Bidders concerned from further participation in the Award Process (see Sanctions below) and this may include forfeiture of all or part of their Deposits.
- 3.75 In certain circumstances, ComReg may also suspend or withdraw a Licence granted to a Winning Bidder if, after the granting of the Licence, it emerges that the Bidder, its Connected Persons or its Insiders breached (a) the Award Rules, or (b) the agreement with ComReg described in Chapter 4. ComReg, in such circumstances, may also declare the result of the Award Process as not binding, wholly or partly, on ComReg.
- 3.76 If two or more Bidders have a common Insider, and if it is not possible to resolve the situation within the deadline set by ComReg and if ComReg does not grant an exemption from the rules on common Insiders, then one or more of the Bidders may withdraw from participation in the Award Process before the deadline set by ComReg, in order that ComReg will not be required to exclude all such Bidders from the Award Process.

### **Exemption from Insider rules**

3.77 ComReg, in exceptional circumstances and at its sole discretion, may grant an exemption from the rules on common Insiders, as described above, and may attach terms to any such exemption. In considering whether to grant such an exemption and on what terms, if any, ComReg will:

- (a) consider the arrangements put in place by a common Insider to prevent the sharing of Confidential Information relating to one Bidder with individuals acting for, or connected, with another Bidder;
- (b) require the provision of information by any or all of the Bidders concerned including, but not limited to, the following:
  - (i). details of all individuals within the common Insider who have acted or are acting for each Bidder;
  - (ii). an organisation chart showing the position of each individual identified under (i) within the common Insider;
  - (iii). a copy of any policies, procedures, and manuals used by the common Insider relating to the segregation of Bidder data;
  - (iv). a written undertaking from the common Insider, in a form acceptable to ComReg, to put in place sufficient safeguards to ensure the segregation of all Confidential Information relating to Bidders for which it acts and not to use any common personnel for different Bidders.

3.78 If one or more Bidders seeks an exemption from the rules on common Insiders it will, as part of its application for such exemption, consent to ComReg contacting the managing director, managing partner, or person occupying an equivalent position in the common Insider, in order to seek the appropriate written undertaking which, if given, shall be expressed to be for the benefit of ComReg.

### **Common directors and/or employees**

3.79 If circumstances should arise in which Bidding Groups and their respective Insiders have common directors and/or employees, the Bidders concerned shall ensure that such common directors and/or employees:

- are not, directly or indirectly, involved in the preparation and/or submission of the Application for more than one Bidder or their Connected Persons, such that they are involved in the Award Process for one Bidding Group only; and

- do not possess or obtain knowledge of any Confidential Information concerning more than one Bidder or their respective Connected Persons or Insiders.

3.80 A Bidder shall ensure that its Connected Persons take all reasonable measures to identify and inform the Bidder if they have any board members or employees who are Insiders in relation to another Bidder, such that the Bidder can take appropriate precautions to ensure that the rules on confidentiality and Bidder behaviour are not breached.

### **Disruption to the Award Process**

3.81 In this section all references to a Bidder shall include any Bidding Group as may be applicable. A Bidder shall refrain from undertaking any action that is intended, or is likely, to distort the outcome of the Award Process.

3.82 A Bidder shall refrain from doing any of the following:

- disclosing any Confidential Information beyond the Bidder and its Connected Persons and Insiders;
- disclosing any Confidential Information in breach of an undertaking given by the Bidder pursuant to an exemption to the rules on common ownership and Insiders granted by ComReg;
- knowingly seeking to obtain and/or obtaining Confidential Information in relation to any other Bidder;
- communicating with any other Bidder or their Connected Persons with the intent of coordinating bidding within the Award Process or with the knowledge that such communications could result in coordinated bidding within the Award Process;
- entering into agreements with any other Bidder or their Connected Persons in relation to the Award Process; and
- for the duration of the Award Process, exchanging information or coordinating or entering into agreements with any other Bidder / Bidding Group or their Connected Persons regarding their strategy for the future use of any Licence obtained on foot of the Award Process.

3.83 The above requirements shall be binding from the date of publication of this IM until ComReg has received SAFs from all Winning Bidders and has publicly announced the final outcome of the Award Process.– i.e. the requirements shall bind prospective Applicants (for any period of time in which they are considering

whether to submit an Application or preparing an Application for submission), actual Applicants, Bidders, and Winning Bidders.

- 3.84 Subject to ComReg's discretion to determine otherwise, any merger or acquisition that may occur during the Award Process shall not be considered to be an act that could adversely affect the Award Process, provided that such a merger or acquisition would not result in a member of one Bidding Group also being a member of another Bidding Group.
- 3.85 Notwithstanding the provisions set out in the paragraphs above, any member of a Bidder / Bidding Group or Insider may disclose Confidential Information to its employees, agents or other representatives, and vice versa, where this is necessary for the purposes of:
- determining the Bidder's / Bidding Group's participation and preparing for its participation in the Award Process, including its Bid strategy;
  - assisting the Bidder / Bidding Group in its participation in the Auction; and
  - dealing with commercial and regulatory matters following, and directly concerned with, the outcome of the Auction, including for example liaison with ComReg prior to the grant of Licences.
- 3.86 However, any member of a Bidder / Bidding Group or Insider may **not** disclose Confidential Information to any member of any other Bidder / Bidding Group, except with ComReg's prior written consent.

### **Restrictive agreements**

- 3.87 Until the Award Process has been completed and ComReg has publicly announced the outcome of same, Bidders / Bidding Groups and their Insiders shall not enter into any agreements or establish any understandings with providers of equipment or software, either before or after the submission of Applications, where any such agreement or understanding would, directly or indirectly:
- restrict any such provider's ability to supply equipment or software to another Bidder / Bidding Group or its Connected Persons regarding the planning, establishment or operation of a network in Ireland involving the Lots which are subject to the Award Process; or
  - restrict the prices or other terms and conditions that a provider could offer to another Bidder / Bidding Group or its Connected Persons regarding the planning, establishment or operation of a network in Ireland involving the Lots which are subject to the Award Process.

3.88 Prior to or during the Auction, a Bidder / Bidding Group, its Connected Persons, or its Insiders may not enter into any agreement or establish any understanding with a third party which agreement or understanding would direct, prohibit, or otherwise prevent the third party from participating in the Award Process or would in any way restrict the third party's ability to participate in the Award Process.

## Sanctions

3.89 In submitting their Applications, all Applicants thereby agree that they shall be subject to a series of possible sanctions for any breach of the Award Rules.

3.90 Certain breaches of the Award Rules and other offending behaviours:

- may entitle other Applicants and/or Bidders to seek redress under civil law;
- may constitute criminal offences (relating to, amongst other things, competition law, fraud, conspiracy, and unlawful use of a computer); and/or
- may result in liability being imposed on individuals who engaged in such behaviours as well as any organisation(s) concerned.

3.91 If, during the Award Process, any Applicant or Bidder becomes aware of any breach of the Award Rules or other offending behaviour, that Applicant or Bidder shall be obliged under the Award Rules to notify ComReg immediately so as to enable appropriate action to be taken.

3.92 If an Applicant or Bidder breaches an Award Rule then, subject to ComReg's discretion and depending on the severity of the breach, possible sanctions include but are not limited to exclusion of the Applicant or Bidder concerned from the Award Process (which may include forfeiture by the Applicant or Bidder concerned of all or part of its Deposit paid on Application).

3.93 If an Applicant or Bidder is excluded from the Award Process then ComReg, at its discretion, may void any or all Bids made by that Applicant or Bidder. For the avoidance of doubt, following the exclusion of an Applicant or Bidder, ComReg may continue with the Award Process unchanged save for the exclusion of that Applicant or Bidder. ComReg further reserves the right to make such alterations to the Award Process as it may consider to be appropriate, at its discretion and having regard to the particular circumstances as may arise.

3.94 A breach of any Award Rule/s by an Applicant or Bidder and/or its Connected Persons or Insiders may lead to forfeiture by the Applicant or Bidder concerned of all or part of its Deposit paid on Application. The amount of a Deposit to be forfeited for breach of any Award Rule/s will be determined by ComReg, at its

discretion and by reference to the nature and severity of the breach and its impact.

3.95 For illustrative purposes only, the following is a non-exhaustive list of actions by an Applicant or Bidder (or by any of Connected Person or Insider of an Applicant or Bidder) that may result in an Applicant or Bidder being excluded from the Award Process (including possible forfeiture of all or part of any related Deposit):

- submitting materially<sup>31</sup> false or misleading information to ComReg;
- failing to update ComReg, in a timely manner, of any material change to information submitted as part of an Application or during the Award Process;
- colluding or attempting to collude with any other person to distort the outcome of the Award Process, or acting in a way which is likely to distort the outcome of the Award Process;
- disclosing Confidential Information to others during the period of restrictions on communications;
- knowingly obtaining or attempting to obtain Confidential Information in relation to any other Bidder;
- any member, director, or employee of a member of a Bidding Group, who is also a member, director, or employee of a member of another Bidding Group, taking part in both Bidding Groups' preparation for participation in the Award Process, or receiving Confidential Information relating to both Bidding Groups, or otherwise participating in the Award Process in relation to more than one Bidding Group;
- canvassing, directly or indirectly, any member of staff of ComReg or consultant engaged by ComReg or any person associated in any way with the Award Process; and
- any other breach of the Award Rules or the agreement with ComReg described in Chapter 5 that is not a trivial or inconsequential breach.

3.96 In certain circumstances, ComReg may also suspend or withdraw a Licence granted to a Winning Bidder if, after the granting of the Licence, it emerges

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<sup>31</sup> Where reference is made in this Information Memorandum to matters being material, ComReg, acting reasonably, shall be entitled to decide whether or not a matter is material. Accordingly, where an Applicant has any doubt as to the materiality of a matter, it should be reported to ComReg.

that the Winning Bidder, or any of its Connected Persons or Insiders, breached the Award Rules or the agreement with ComReg described in Chapter 5.

- 3.97 Where an Award Rule is breached not by a Bidder but by a Bidder's Connected Person/s or Insider/s, ComReg shall have discretion to waive or limit the application of sanctions if it can be shown that the breach occurred without the Bidder's knowledge, that the Bidder had taken all reasonable steps to avoid the breach, and that the breach has not caused material detriment to the Award Process.
- 3.98 Nothing in this IM shall preclude ComReg from seeking alternative remedies for a breach of any Award Rule, including, but not limited to, a claim for damages or bringing proceedings under the Competition Act 2002, the Communications Regulation Act 2002, and/or the Specific Regulations.

### 3.4.6 Application procedure

- 3.99 In order to participate as a Bidder in the Award Process, an Applicant must submit four completed and identical Application Forms in paper format, including four identical copies of an Ownership Structure Document and electronic copies of same in an editable format on CD-ROM. The container(s) in which the Application Form and Ownership Structure Documents and CD-ROM are submitted must not in any way disclose the identity of the Applicant.
- 3.100 ComReg will only accept applications submitted between **10.00 hours and 16.00 hours** (Irish time) on any of the following five Working Days:
- **Tuesday 15 May 2018**
  - **Wednesday 16 May 2018**
  - **Thursday 17 May 2018**
  - **Friday 18 May 2018**
  - **Monday May 21 2018**
- 3.101 Applicants must make appointments with ComReg to submit their Applications. To make an appointment, an Applicant must contact **Mr Jack O'Dwyer** by telephone between **10:00 to 13:00 and 14:00 to 16:00 hours (Irish time)** on Working Days between **Friday 11 May 2018** and **Friday 18 May 2018**, incl.
- 3.102 The number for telephoning Mr O'Dwyer is: **00353 (1) 804 9753**.
- 3.103 All submitted Applications will be date and time stamped upon being received by ComReg.
- 3.104 Each Applicant will be given a receipt acknowledging the submission of its Application.

- 3.105 No Applications will be opened by ComReg before **16:00 hours (Irish time)** on **Monday 21 May 2018** (the Application Date). All Applications will be opened at the same time and place and in the presence of an independent auditor.
- 3.106 The deadline for receipt of all Deposits will be **23:59 hours (Irish time)** on **Monday 21 May 2018**.
- 3.107 As noted in section 3.4 of this IM, ComReg will facilitate the submission of questions about the Award Process up until and including **Tuesday 8 May 2018**. Starting from **Wednesday 9 May 2018**, and through to the conclusion of the Notification and Grant Stage, ComReg may decide not to reply to questions from Applicants or Interested Parties except where such communications relate to any breach of the Award Rules or unless specifically requested by ComReg or its agents in accordance with the IM.
- 3.108 Once an Application has been submitted it will constitute a binding offer by the Applicant concerned to purchase the Lots identified in the completed Lot Application Form.

### **Communication with ComReg during the Award Process**

- 3.109 Where a Bidder wishes to contact ComReg during the Award Process correspondence should be delivered by hand or courier to ComReg's offices to the address set out in Para 3.23. ComReg will not respond to any correspondence received electronically in relation to the Award Process.

## **3.5 Qualification Stage**

### **3.5.1 Evaluating Applications**

- 3.110 Once the Application Date of 16:00 on Monday 21 May 2018 has passed, ComReg will evaluate all Applications received within the specified period of time and will determine which Applications are valid.
- 3.111 Applicants that submitted valid Applications shall be deemed to be Bidders.
- 3.112 Following the completion of its assessment of all Applications, ComReg will inform each Applicant as to whether it has been approved as a Bidder.
- 3.113 ComReg will not inform Bidders of the identities of other Bidders or of the identities of unsuccessful Applicants (who fail to become Bidders).
- 3.114 Applicants who become Bidders will remain strictly bound by the Award Rules on the release of Confidential Information until ComReg has publicly announced the final outcome of the Award Process

### 3.5.2 Assessment of applications

- 3.115 If an Applicant fails to ensure that ComReg receives the full Deposit for the Lots for which the Applicant has applied (in its Lot Application Form)<sup>32</sup> by the specified deadline date, ComReg, at its discretion, may decide that the Applicant's Application is not valid and that the Applicant is not eligible to participate as a Bidder in the Award Process. Alternatively, ComReg may provide a short additional period of time for the full amount of the required Deposit to be paid by the Applicant.
- 3.116 If an Applicant does not become a Bidder due to failing to make the required full Deposit, any Deposit which it has paid will be returned to it in accordance with the timeline for the return of Deposits to unsuccessful Applicants set out in Table 3 (subject to any extension of that timeline which shall not exceed the length of any grace period that may have been given to the Applicant to pay the balance of its incomplete Deposit).
- 3.117 If any aspect of an Application is found to be incomplete, unclear, or otherwise invalid, ComReg at its discretion shall decide what measures to take, taking into account the nature of the ambiguity, omission, or invalidity. Such measures may include seeking clarification or verification of information already provided, requesting further information from the Applicant, or deeming the Application concerned to be invalid.
- 3.118 If an Application is in some material manner incomplete, inaccurate, invalid, or untrue, ComReg reserves the right to directly and immediately exclude the Applicant concerned from becoming a Bidder – i.e. ComReg may do so without providing the Applicant an opportunity to clarify or correct its Application. If, having determined that an Applicant may participate in the Award Process as a Bidder, ComReg should subsequently become aware that the Bidder's original Application was incomplete, inaccurate, invalid, or untrue, ComReg may, at its discretion, allow the Bidder opportunity to clarify or correct the information already provided.
- 3.119 If such a Bidder cannot provide correction or clarification to ComReg's satisfaction, within the time limit specified by ComReg, that Bidder may be excluded from the Award Process with return of all, part, or none of its Deposit in accordance with the timeline set out in Table 3. If any material inaccuracy or untruth in an Application is identified, ComReg reserves the right to exclude the Bidder directly without providing opportunity for the Bidder to clarify or correct the information already provided.

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<sup>32</sup> As set out in section 3.4.4, the required amount of the deposit corresponds to the largest Bid amount specified for any Package of Lots in the Applicants Lot Application Form.

- 3.120 Where an Applicant is declared unsuccessful in its Application due to deficiencies therein, the Applicant's Deposit will be returned to it in accordance with the timeline for the return of Deposits to unsuccessful Applicants set out in Table 3 (subject to any additional grace period as may have been given to the Applicant to address the deficiencies in its Application).
- 3.121 Where an Applicant is declared successful and becomes a Bidder, but its Application is subsequently found to have been in some material manner incomplete, inaccurate, invalid, or untrue, the Bidder's Deposit may or may not be returned, in whole or in part, depending on the nature and seriousness of the deficiency in its Application. Where part of a Deposit is returned, it will be returned within one week of the Bidder being informed that it is not eligible to further participate in the Award Process.
- 3.122 Applicants and Bidders have an on-going obligation to inform ComReg of any material changes to information provided in their Applications. If an Applicant or Bidder becomes aware of any material error, omission, or inaccuracy in its Application, the Applicant or Bidder shall inform ComReg of same as soon as reasonably possible. This obligation shall remain in effect for the duration of the Award Process and for the duration of any Licence granted on foot of the Award Process.

## **3.6 Assessment Stage**

- 3.123 In the Assessment Stage ComReg will determine:
- the number of frequency-generic Lots to be assigned to each Winning Bidder; and
  - the Base Prices to be paid by Winning Bidders.
- 3.124 Only Valid Bids will be considered when determining Winning Bidders and Base Prices. If no Valid Bids are received then there will be no Winning Bidders. Winning Bids (and Winning Bidders) and Base Prices will be determined as set out below.
- 3.125 In the remainder of this section, all references to a 'Bid' or 'Bids' are references to Valid Bids.

### **3.6.1 Winner Determination**

- 3.126 A Feasible Combination of Bids is one in which:
- no more Lots are awarded than are available - i.e. the total number of Lots in the combination of Bids is less than or equal to 19; and
  - at most one Bid is accepted from each Bidder.

- 3.127 The value of a Feasible Combination of Bids is equal to the sum of the Bid Amounts for all Bids in the combination, plus the Reserve Price of any Lots that would remain unassigned if only the Bids in the combination are accepted.
- 3.128 The combination of Winning Bids (the Winning Allocation) is a Feasible Combination of Bids that has the greatest value across all Feasible Combinations of Bids, considering all Bids submitted in the Application Stage.
- 3.129 If there are multiple Feasible Combinations of Bids, of equal greatest value and that meet the conditions above, the Winning Allocation will be the Feasible Combination of Bids amongst these tied scenarios with the greatest number of assigned Lots.
- 3.130 If the rules do not identify a unique Feasible Combination of Bids, the Winning Allocation will be selected at random from all combinations of Bids that satisfy these rules.

### **3.6.2 Base Price determination**

- 3.131 For each Winning Bid (and thus for each Winning Bidder), ComReg will determine a Base Price that must be paid by the Winning Bidder. The Base Price is the overall price for the number of frequency-generic Lots included in the Winning Bid.
- 3.132 Base Prices are based on the concept of Opportunity Cost.
- 3.133 The Opportunity Cost of a Bidder, or a group of Bidders, is defined to be the difference between:
- the value of the hypothetical Winning Allocation in a scenario in which all Bids from the Bidder(s) in question were excluded; and
  - the value of the original Winning Allocation less the total Bid Amount from all Winning Bids (in the original Winning Allocation) from the Bidder(s) in question.
- 3.134 The value of a Winning Allocation is the total of winning Bid Amounts plus the value of any unassigned Lots at Reserve Prices.
- 3.135 Base Prices are determined jointly for all Winning Bidders in a single-calculation. A unique set of Base Prices is found by applying the following requirements:
- First requirement: the Base Price of a Winning Bid must be greater than or equal to the total Reserve Prices of all Lots included in the corresponding Winning Bid, but less than or equal to the winning Bid Amount.

- Second requirement: the set of Base Prices must be sufficiently high such that the sum of prices to be paid by each possible subset<sup>33</sup> of Winning Bidders must be at least their Opportunity Cost. If there is only one set of Base Prices that meet the first and second requirements, this determines the Base Prices to be paid by Winning Bidders.
- Third requirement: if there are multiple sets of Base Prices that fulfil the first and second requirements, the set(s) of Base Prices that minimise(s) the sum of Base Prices across Winning Bidders is selected. If there is only one set of Base Prices satisfying the first, second and third requirements, this determines the Base Prices to be paid by Winning Bidders.
- Fourth requirement: if there are multiple sets of Base Prices that satisfy the first three requirements, the set of Base Prices is selected that minimises the sum of squares of differences between the Base Prices for each Winner and the individual Opportunity Cost for that Winner is selected.

3.136 The above requirements characterise a unique Base Price for each Winning Bidder that is no more than their Winning Bid and is at least the sum of Reserve Prices for all Lots included in the Winning Bid.

3.137 All Base Prices will be rounded up to the nearest EUR €100.

### **3.6.3 End of Assessment Stage**

3.138 Once ComReg has determined Winning Bids and Winning Bidders and applicable Base Prices, each Winning Bidder will be told the Base Price that applies to its own Winning Bid. This information will not be released to other Bidders at this stage.

## **3.7 Assignment Stage**

3.139 The Assignment Stage determines the specific frequencies that will be assigned to each Winning Bidder, following the Assessment Stage.

3.140 ComReg will establish all possible ways of assigning specific frequencies to Winning Bidders, subject to the requirements that:

- each Winning Bidder be assigned a contiguous block of spectrum corresponding to the number of Lots which it won in the Assessment Stage;

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<sup>33</sup> This includes the subset of all Winning bidders and the subsets that consist of only one Winning Bidder.

- any option for assigning frequencies to a particular Winning Bidder must be consistent with all other Winning Bidders receiving contiguous blocks of spectrum corresponding to the number of Lots which they won in the Assessment Stage.

- 3.141 The frequency assignments that meet these criteria will form the set of Feasible Frequency Plans. By considering all Feasible Frequency Plans, ComReg shall ensure that Winning Bidders are able to express their preferences (in the form of Assignment Bids) for alternative positions in the portion of the 26GHz band.
- 3.142 If there is only one Winning Bidder following the Assessment Stage, it will be invited to select its preferred frequency assignment from the Assignment Options available.
- 3.143 If there is more than one Winning Bidder, the Assignment Stage will include an Assignment Round to determine the frequency assignment for each Winning Bidder. This will require a bidding process if there is potential conflict between the frequency assignments that could be awarded to two or more Winning Bidders.

### **3.7.1 Assignment Round**

- 3.144 For each Winning Bidder, the set of Feasible Frequency Plans will have an associated set of frequency assignments that could be assigned to that particular Winning Bidder. These are the Winning Bidder's Assignment Options. The number of Assignment Options available to a Winning Bidder will be less than or equal to the total number of Feasible Frequency Plans because a bidder could have the same Assignment Option in more than one Feasible Frequency Plan .
- 3.145 If there is more than one Winning Bidder following the Assessment Stage, all Winning Bidders will be invited to submit Assignment Bids for their respective Assignment Options and the frequency ranges to be assigned to each Winning Bidder will be established on the basis of those Assignment Bids.
- 3.146 A Winning Bidder may submit Assignment Bids for all, some, or none of its Assignment Options. Note that all Winning Bidders eligible to participate in the Assignment Stage are guaranteed to win the amount of spectrum that they won in the Assessment Stage. Assignment Bids will only affect which of the possible Feasible Frequency Plans will be implemented and any Additional Prices to be paid for specific frequencies. Bids for different Assignment Options with the same Bid Amount will indicate that the Winning Bidder is indifferent between these Assignment Options. It is recommended (but not obligatory) that each Winning Bidder submit an Assignment Bid of zero EURO (€0.00) for its least favoured Assignment Option.

### 3.7.2 Assignment Bids

- 3.147 The amount of each Assignment Bid is discretionary. Assignment Bid Amounts must be in whole Euros and be specified on the Assignment Bid Form in both numerical form and written form. Where the numerical form and written form of any Assignment Bid Amount do not match, the written form will be used to determine winning Assignment Bids and Additional Prices. The minimum Assignment Bid is zero EURO (€0.00) and there is no upper limit.
- 3.148 Each valid Assignment Bid will represent a binding commitment by the Winning Bidder concerned to pay an Additional Price for the corresponding Assignment Option that is less than or equal to the Assignment Bid Amount submitted for that Assignment Option.
- 3.149 An Assignment Bid that is deemed valid shall remain valid unless voided by ComReg. An Assignment Bid may be voided, and thus deemed invalid, if:
- (a) a Winning Bidder fails to provide the required funds to ComReg within the set deadline following a Deposit Call (in which case, at ComReg's absolute discretion, all of the Winning Bidder's Assignment Bids may be voided); or
  - (b) a Winning Bidder is excluded from the Award Process (in which case all of that Winning Bidder's Assignment Bids may be voided).
- 3.150 If a Winning Bidder does not specify a Bid Amount for one or more of its Assignment Options, on its Assignment Bids Form, it will be deemed to have submitted an Assignment Bid of zero EURO (€0.00) for each of the Assignment Options. If a Winning Bidder fails to submit a valid Assignment Bids Form within the set deadline, it will be deemed to have submitted Assignment Bids of zero EURO (€0.00) for all of its Assignment Options.

### 3.7.3 Procedure for submitting Assignment Bids

- 3.151 Following its determination of Assignment Options, ComReg will provide at least one Authorised Agent of each Winning Bidder with an Assignment Bid Form that shall be specific to each Winning Bidder. Each Assignment Bid Form will specify all of the Assignment Options that are available to the particular Winning Bidder and the fields for entering corresponding Assignment Bids. ComReg will also set out how the completed version should be returned and the deadline for its return (it must be returned within 5 Working Days commencing from the date on which ComReg provided the Assignment Bid Form to the Winning Bidder). ComReg, at its discretion, may extend the time period for Winning Bidders to return the completed version depending on the circumstances that may arise.
- 3.152 All completed Assignment Bid Forms returned by Winning Bidders will be opened at the same time and place and in the presence of an independent

auditor. The Assignment Stage may commence when ComReg has received all completed and valid Assignment Bid Forms from Winning Bidders, or on expiry of the deadline specified for its return, including any extension that may have been granted by ComReg.

- 3.153 ComReg will circulate the procedure for submitting Assignment Bids to the Authorised Agent(s) of Winning Bidders using the contact details for such Authorised Agents as set out in the relevant Application Forms.

### **3.7.4 Deposit Call**

- 3.154 Following the submission of Assignment Bids, and prior to notifying Winning Bidders of the outcome of the Assignment Round, ComReg reserves the right to notify any Winning Bidder that it must increase its Deposit by a specified amount. ComReg reserves the right to issue a Deposit call of up to 100% of the amount required to ensure that the Winning Bidder's Deposit is equal to the sum of its Base Price plus its highest Assignment Bid.
- 3.155 If a Deposit Call is issued, ComReg will specify a time period of not less than three Working Days during which the notified Winning Bidder's additional Deposit funds must be received by ComReg as cleared funds in its bank account (as specified in Annex 3:).
- 3.156 ComReg will not inform Winning Bidders of the result of the Assignment Round in the time period between the date of issue of a Deposit Call and the specified date by which additional cleared Deposit funds must be received. However, ComReg may inform Winning Bidders of the result of the Assignment Round prior to the deadline for the receipt of additional cleared Deposit funds, if all such funds have been received and cleared in advance of that deadline.
- 3.157 If any Winning Bidder who is the subject of a Deposit Call does not provide the required additional, cleared Deposit funds by the set deadline, ComReg at its discretion may void the Winning Bidder's entire Assignment Bids (i.e. set all of them at zero EURO (€0.00)).

### **3.7.5 Winner and Additional Price Determination**

#### **Determination of winning Assignment Bids**

- 3.158 ComReg, based on all valid Assignment Bids submitted, will determine:
- (a) the Assignment Option to be awarded to each Winning Bidder; and
  - (b) the Additional Prices to be paid by Winning Bidders for specific frequencies.

- 3.159 The winning Assignment Bids are the combination of valid Assignment Bids of greatest total value amongst all valid Assignment Bids submitted, subject to the conditions that:
- exactly one Assignment Bid is accepted from each Winning Bidder; and
  - the specific frequency assignments corresponding to the set of winning Assignment Bids corresponds to one of the Feasible Frequency Plans identified by ComReg on generation of Assignment Options.
- 3.160 If more than one combination of Assignment Bids meeting the conditions above have equal highest total value, the combination from amongst those in the tied scenario that minimises the extent to which unassigned spectrum is fragmented will be selected. Such fragmentation will be determined by maximising the sum of squares of the numbers of Lots in each contiguous range of unassigned lots.
- 3.161 If more than one combination of Assignment Bids meet the criteria above, one of the combinations from amongst those in the tied scenario will be selected at random.

### **Additional Price Determination**

- 3.162 There will be no Additional Price payable for the assignment of frequencies, if there is only one Winning Bidder.
- 3.163 If a bidding process is required (i.e. if there are more than one Winning Bidder), ComReg will determine the Additional Prices (if any) that Winning Bidders must pay in order to be awarded the Assignment Option which they have won. Additional Prices shall be in addition to Base Prices determined at the Assessment Stage.
- 3.164 Additional Prices are based on the concept of Opportunity Cost.
- 3.165 The Opportunity Cost of a Winning Bidder, or a group of Winning Bidders, is defined to be the difference between:
- the total amount of all winning Assignment Bids in a hypothetical scenario in which all the Assignment Bids of the Winning Bidder(s) in question were set to zero; less
  - the total amount of the original winning Assignment Bid(s) less the total amount of the winning Assignment Bid(s) from the Winning Bidder(s) in question.
- 3.166 Additional Prices are determined jointly for all Winning Bidders in a single calculation. A unique set of Additional Prices is determined by applying the following requirements:

- **First requirement:** Additional Prices must be positive or zero and no greater than the Bid Amount of the winning Assignment Bid.
- **Second requirement:** the set of Additional Prices must be sufficiently high such that the sum of Additional Prices to be paid by each possible subset of Winning Bidders must be at least their Opportunity Cost. If only one set of Additional Prices satisfies the first two requirements, this determines the Additional Prices.
- **Third requirement:** if multiple sets of Additional Prices fulfil the first and second requirements, the set(s) of Additional Prices that minimise(s) the sum of Additional Prices across all Winning Bidders is selected. If only one set of Additional Prices satisfies these three requirements, this determines the Additional Prices.
- **Fourth requirement:** If multiple sets of Additional Prices satisfy the first three requirements, the set of Additional Prices that minimises the sum of squares of differences between the Additional Prices for each Winning Bidder and the Opportunity Cost for that Winning Bidder is selected.

3.167 The above requirements characterise a unique Additional Price for each Winning Bidder that is no more than its winning Assignment Bid.

3.168 Any Additional Prices not in units of EUR 100 will be rounded up to the nearest EUR 100.

### 3.7.6 End of the Assignment Stage

3.169 Once ComReg has determined the winning Assignment Bids and Additional Prices, each Winning Bidder will be informed of the Additional Price that it is liable to pay. This information will not be revealed to other Bidders at this stage.

## 3.8 Notification and Grant Stage

3.170 Once ComReg has determined the Base Prices for Winning Bids and Additional Prices to be paid for specific frequency assignments that have been determined in the Assignment Stage, ComReg will notify each Bidder in writing as to whether it has been successful in acquiring Lots in the Award Process.

3.171 ComReg will return Deposits to Bidders who failed to win any Lots (less any Deposit forfeiture imposed under the Award Rules) within approximately two weeks of this notification.

3.172 ComReg will notify Winning Bidders of their entitlement to apply for a Licence, subject to certain upfront obligations as set out in Section 3.10, including the obligation to pay the applicable Upfront Fee.

- 3.173 The Upfront Fee to be paid by each Winning Bidder, prior to the granting of a Licence, will be equal to the sum of the applicable Base Price plus Additional Price.
- 3.174 The notification to the Winning Bidder will specify the date for payment of the Upfront Fee and first SUF (the "Payment Deadline"). The Payment Deadline will be approximately two weeks after the release of the results of the Assignment Stage to Bidders. Payment of each Winning Bidder's Upfront Fee and first SUF is a pre-requisite to that Winning Bidder being entitled to apply for a Licence.
- 3.175 If a Winning Bidder's Upfront Fee exceeds its Deposit, the balance of funds due must be received by ComReg as cleared funds in its specified bank account by no later than 23:59 hours (Irish time) on the Payment Deadline. If a Winning Bidder's Upfront Fee, less any applicable rebates, is less than its Deposit, the relevant amount of the Deposit will be returned to the Winning Bidder by the Payment Deadline (less any Deposit forfeiture imposed under the Award Rules).
- 3.176 The notifications<sup>34</sup> to Bidders under Para 3.176 will specify that each Winning Bidder must comply with the terms and conditions of any Licence granted to it (as detailed in draft form in Annex 2 and as described in Section 2.2 of this IM). In that regard the notification to each Winning Bidder, relating to the Lots which that Winning Bidder won in the Award Process and the Licence which may be granted to that Winning Bidder if certain prerequisites are met, will specify the following:
- the Lots to be included in the Licence (being the Lots won by the Winning Bidder in the Award Process);
  - the expected Commencement Date of the Licence (noting the possibility of any such Commencement Date being delayed);
  - the expiry date of the Licence;
  - that the Winning Bidder must pay the applicable SUF for the Licence before being granted the Licence;
  - the expected date on which ComReg will issue an invoice to the Winning Bidder in respect of the applicable SUF for its Licence (noting that the expected Commencement Date of any Licence may be delayed);
  - information that the Winning Bidder must provide to ComReg in order to populate Parts 2 and 3 of the Licence (the notification will specify that the Winning Bidder must provide all such information to ComReg in order for the Licence to be granted and that, absent such information, the Licence will not be granted); and

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<sup>34</sup> This notification will be sent to all Winning Bidders.

- that the Winning Bidder must comply with the Transition Rules set out in Section 3.9 of the IM.
- 3.177 ComReg will grant a Licence to any Winning Bidder who has submitted its Upfront Fee and first SUF by the Payment Deadline and complied with the above prerequisites.
- 3.178 ComReg, at its discretion, may extend the time period for Winning Bidders to comply with all of the prerequisites to being granted a Licence, as set out above. If a Winning Bidder does not comply with all of the prerequisites, including the payment of the Upfront Fee and first SUF, it will not be granted a Licence and it may forfeit its Deposit (without prejudice to ComReg's entitlement to recover the full amount due in respect of all Lots won as a simple contract debt).
- 3.179 Once a Licence has been granted to a Winning Bidder, ComReg will publish the text of the Licence on its website and will publish any subsequent amendments to said Licence, as may be made in due course.

### **3.9 Transition Rules & Transition Plan**

- 3.180 Existing Licensees may be required to make adjustments to their existing networks ('Transition Activities') in order to comply with the outcome of the Award Process and if they wish to continue to provide services following the cessation of their Existing Licences. All Bidders and Existing Licensees shall be required to comply in full with the Transition Rules as set out in this IM and with the eventual Transition Plan when it comes into effect.
- 3.181 Upon completion of the Assignment Stage, ComReg will notify Winning Bidders and Existing Licensees (any of whom may also be Winning Bidders) of the specific frequency assignments resulting from the Assignment Stage. This notification will also require Winning Bidders and Existing Licensees who are bound by the Transition Rules to formulate Transition Plan Proposals and to submit same to ComReg. Each such party may formulate its own individual Transition Plan Proposal or any number of such parties may collaborate to formulate a common Transition Plan Proposal.
- 3.182 The Transition Plan Proposals, and the Transition Plan as subsequently adopted by ComReg, should identify and consider all Transition Activities<sup>35</sup> required by Existing Licensees.
- 3.183 The deadline for submitting Transition Plan Proposals will be 4 weeks from the above notification, with ComReg reserving the right to specify a different

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<sup>35</sup> The Transition Activities refer to the activities required by the Existing Licensee to make adjustments to their existing networks in order to comply with the outcome of the award process and align their use of spectrum with the rights of use that they obtain, if any.

deadline. Transition Plan Proposals shall be submitted to ComReg for its consideration (including consideration by its agents or servants) and the consideration of other Winning Bidders and Existing Licensees in these bands.

3.184 A Transition Plan Proposal must contain at least the following, to ComReg's satisfaction:

- it must identify all Transition Activities to be undertaken by the Existing Licensee(s) and the order of each activity;
- it must set milestones for each Transition Activity;
- it must identify any Transition Activities of one Existing Licensee that are dependent upon the Transition Activities of another Existing Licensee (such that any delays can be clearly attributed to the responsible Existing Licensee);
- it must contain a robust and transparent mechanism to enable ComReg (including its agents or servants), Existing Licensees, Winning Bidders and/or other Interested Parties to monitor completion of the Transition Activities according to the identified milestones (subject to non-disclosure of Confidential Information); and
- the Existing Licensee/s concerned must accept liability for any liquidated damages that may be payable the event of non-completion of any or all Transition Activities by the relevant milestones, where such non-completion is the result of some action or omission by the Existing Licensee/s concerned.

3.185 Following receipt of the Transition Plan Proposals, ComReg will engage with Winning Bidders and Existing Licensees in order to finalise a Transition Plan. This may take the form of written consultation and/or multilateral and/or bilateral meetings.

3.186 If any parties bound by the Transition Rules are unable or unwilling to submit a Transition Plan Proposal by the stipulated deadline, ComReg will formulate and implement a Transition Plan following appropriate consultation or discussion with Winning Bidders and Existing Licensees while seeking to ensure that there is no undue delay in the granting of Licences.

3.187 ComReg reserves the right to make a final binding decision on all matters pertaining to the finalised Transition Plan.

3.188 The finalised Transition Plan will be published on ComReg's website in accordance with ComReg's Guidelines on the Treatment of Confidential

Information (Doc 05/24). ComReg shall reserve the discretion to vary the Transition Plan, as appropriate.

### **3.9.1 Liquidated Damages**

- 3.189 In order to create appropriate incentives for the effective and timely completion of all Transition Activities, Existing Licensees and Winning Bidders shall agree that if they should fail to complete their Transition Activities effectively and within the set milestones / deadlines, they shall be liable for liquidated damages in respect of any such failure. Such damages shall be payable immediately to ComReg, upon demand for same, and shall be non-refundable.
- 3.190 The quantum of any payment of liquidated damages - as may be imposed on any Winning Bidder/s and/or Existing Licensee/s who have failed to complete their Transition Activities effectively and within the set milestones / deadlines - will be based on the quantum of any refund of, or adjustment to, the Fee for a Licence due to ComReg being unable to grant that Licence (or make all Lots under that Licence available to the Winning Bidder concerned) within the specified time period (and where ComReg's inability to so is a consequence of the Winning Bidder/s and/or Existing Licensee/s having failed to complete their Transition Activities effectively and within the set milestones / deadlines).
- 3.191 Section 2.2.5 of this IM details the refund/s or adjustment/s to any Licence Fee/s that ComReg will use in pre-estimating the quantum of any liquidated damages as may be payable under this section of the IM.

### **3.9.2 Exceptional Circumstances**

- 3.192 If exceptional circumstances should arise during any stage of the Assessment Stage ComReg shall have discretion to:
- void some or all Bids received in the Assessment Stage and suspend or restart the Assessment Stage; and/or
  - take such other measures as are considered appropriate and proportionate, in the exceptional circumstances and in order to complete the Award Process in accordance with ComReg's statutory remit.
- 3.193 ComReg will determine whether exceptional circumstances have arisen having regard to the relevant facts at that point in time. Exceptional circumstances could include, for example, material concern about collusion amongst Bidders.
- 3.194 If any Bidder is excluded from the Auction and if some or all of that Bidder's Bids are deemed invalid, ComReg would typically not expect such a circumstance to be exceptional such that it would be necessary to suspend or restart the Auction or to modify the Auction in some manner as could adversely affect other

Bidders. However, ComReg will consider all such circumstances as they arise and having regard to the relevant facts at that point in time and will not fetter its discretion as to what measures it may take.

### **3.10 End of Award Process**

- 3.195 Once ComReg has determined the Winning Bids and frequency assignments to be assigned to Winning Bidders, the results of the Award Process will be made public.
- 3.196 The following information will be released:
- the identities of Winning Bidders;
  - the Lot/s awarded to each Winning Bidder;
  - the Base Price to be paid by each Winning Bidder; and
  - the Additional Price (if any) to be paid by each Winning Bidder.

### **3.11 Interim Licences**

- 3.197 With regard to the indicative timeline in Table 3, it would appear that the Award Process will not be completed.
- 3.198 Accordingly, it will be necessary to make provision for the resulting interim time period by granting short-term Interim Licences to Existing Licensees (noting that Interim Licences shall only be granted to Existing Licensees, where required by an Existing Licensee).
- 3.199 The sole purpose of any Interim Licence shall be to maintain the status quo until the Award Process has been completed and the new Licences and associated rights of use in the 26 GHz band come into effect.
- 3.200 ComReg estimates, at this time, that if Interim Licences are required then they should be of approximately 6-8 weeks duration (though ComReg reserves its discretion to determine the final duration of any such Interim Licences).
- 3.201 Interim Licences would permit Existing Licensees to possess and operate apparatus for wireless telegraphy under essentially the same conditions as apply to their Existing Licences, including as to fees.
- 3.202 ComReg considers that the granting of any Interim Licences would be consistent with its statutory functions, objectives and duties and would maximise benefits for users by ensuring continuity of services.
- 3.203 The P2P Regulations provide for the possibility of such Interim Licences.

3.204 SUFs for any Interim Licence would be payable on a monthly basis and would be based pro rata on the annual SUFs currently paid by Existing Licensees, adjusted for inflation based on the Consumer Price Index. The annual SUFs paid in 2017 were as follows:

| <b>Licensee</b> | <b>No. Of Blocks</b> | <b>Annual Spectrum Fee paid in 2017 €</b> |
|-----------------|----------------------|---|
| BT              | 2                    | 81,848.00                                 |
| Irish Broadband | 1                    | 40,924.00                                 |
| Three           | 5                    | 204,620.00                                |
| Vodafone        | 4                    | 163,696.00                                |

## Chapter 4

# 4 Legal Terms and Conditions

## 4.1 Important Notice

- 4.1 This IM is solely for the purpose of assisting prospective Bidders in deciding whether to participate in the Award Process, in accordance with the terms of this IM, and to assist prospective Bidders and their agents in preparing for and understanding the Award Process. This IM may not be used for any other purpose and, when using it for its stated purpose, prospective Bidders are strictly subject to the terms and conditions set out in this IM.
- 4.2 In this IM an “**Interested Party**” shall have the meaning ascribed to this expression in the Glossary to this IM.
- 4.3 To the extent permitted by law, no representation or warranty or undertaking (express or implied) is or will be made by ComReg or its personnel or agents and no liability or responsibility is or will be accepted by ComReg or its personnel or agents as to:
- i. the adequacy, accuracy or completeness of the information, opinions or statements (or the basis on which they are premised) contained in this IM or in any of the documents referred to herein;
  - ii. any omissions, errors or misstatements contained in this IM or in any documents referred to herein;
  - iii. any software used to implement the Award Process’; and
  - iv. the contents of any written or oral information made available by ComReg or its personnel or agents to Interested Parties or any third party relating to the Award Process.
- 4.4 To the extent permitted by law, any liability and/or loss of any nature arising from this IM and its use by Interested Parties is expressly disclaimed.
- 4.5 Without prejudice to the foregoing and to the extent permitted by law, ComReg’s aggregate liability for all losses or damages of any nature arising from delayed access to Lots is expressly limited to the refunds or adjustments of Licence Fees as set out in Section 2.2.5 of this IM.
- 4.6 To the extent permitted by law, Interested Parties shall not be entitled to rely on the contents of this IM to argue that they have rights or expectations, pursuant to legitimate expectation, estoppel or other related legal arguments, that:
- i. ComReg will not exercise any of its rights reserved in Section 4.2.6 of this chapter;

- ii. they will be awarded any spectrum at the end of the Award Process;
  - iii. bidding in any particular manner will, of itself, guarantee success in the Award Process;
  - iv. ComReg will, during the term of any Licence granted pursuant to the Award Process, modify the terms of such Licence, or the regulations affecting such Licence, in any manner and, without prejudice to the generality of the foregoing, that ComReg will permit the use of any particular new technologies in the spectrum rights of use licensed in the Award Process; or
  - v. ComReg will reassign rights of use of spectrum licensed pursuant to the Award Process in any particular way at the termination of any Licences granted pursuant to the Award Process.
- 4.7 While ComReg, its personnel and agents intend to implement the Award Process, ComReg, its personnel and agents give no indication or commitment and make no statements as to the possible outcomes of this Award Process.
- 4.8 In accessing this IM, Interested Parties acknowledge that they will be solely responsible for their own assessment of any matter connected with the Award Process to which the IM relates. Interested Parties are responsible for forming their own views, deciding if they will partake in the Award Process, completing the relevant Application Forms and calculating any Bids.
- 4.9 All dates in this IM are, unless specifically stated to the contrary, target or indicative dates only and may be subject to change at the sole discretion of ComReg acting in line with its statutory functions, objectives and duties.
- 4.10 Whilst the information in this IM has been provided in good faith, it does not purport to be comprehensive nor to have been independently verified. Interested Parties should form their own views. ComReg reserves the right to amend this IM and any information or documents contained or referred to herein in accordance with Para 4.32 of this Chapter.
- 4.11 Nothing in this IM is, or should be relied upon as, a promise or representation as to ComReg's ultimate decision in relation to the award of a Licence or Licences. ComReg reserves the right to suspend or not to proceed with the Award Process or any part thereof and may terminate the Award Process or any part thereof at any time and, in such event, ComReg shall not be liable, howsoever, to any Interested Party save for ComReg's obligation to return Deposits in certain circumstances. ComReg also reserves the right, in accordance with law, to change any procedure in relation to the Award Process. ComReg reserves the right to reject any and all Applications received as part of the Award Process or not to select any Applicant for the grant of a Licence. It is recommended that Interested Parties seek their own financial, legal and

technical advice at their own cost in relation to the Award Process. The publication of this IM or any information made available in connection with the Award Process does not constitute nor is to be taken as constituting the giving of financial, legal, technical or investment advice by ComReg, its personnel or agents.

- 4.12 Any conflict of interest or potential conflict of interest – including but not limited to any conflict arising under the rules set out in Sections 3.4.4 and 3.4.5 of this IM – must be disclosed to ComReg by any Interested Party or by any prospective or actual Bidder as soon as such conflict of interest or potential conflict of interest becomes apparent. The appropriate course of action to be taken in such event shall be decided upon by ComReg, at its discretion acting in line with its statutory functions, objectives and duties.
- 4.13 This IM should be read and construed in accordance with the previous documentation issued by ComReg as part of this process including:
- Consultation 17/85;
  - Response to Consultation and Draft Decision 18/12; and
  - Response to Consultation and Decision 18/YY.

along with the associated consultants' reports and other relevant ComReg documents which are available on ComReg's website (the "Consultation Process Documents"). Noting that the consultation process has been complex and the views of ComReg and the respondents have evolved over time, in the event of any conflict between the views expressed in any of the Consultation Process Documents the view expressed in the later document shall take precedence. Where any draft document, for instance a draft statutory instrument, draft decision or draft IM has been supplanted by a finalised document, the draft document should be discounted entirely. In the event of any conflict or inconsistency between the Consultation Process Documents and this IM, this IM shall take precedence.

- 4.14 No legal obligations on the part of ComReg to grant any Licenses will arise unless and until the granting and commencement of a Licence or Licences by ComReg following the completion of the Award Process.
- 4.15 The legal and contractual obligations described in this Chapter of the IM are imposed on Interested Parties who are furnished with or who download this IM and ComReg reserves the right to enforce such obligations. Copyright (and any other intellectual property rights) in this IM vest and remain in ComReg and its licensors and recipients of this document, including Interested Parties, shall not use or copy this IM other than in pursuit of the purposes described in Para 4.1 above, without the permission of ComReg. Applicants who submit Applications to enter the Award Process shall be obliged to express their acceptance to the

provisions of this Chapter as part of the submitting its Application (See Section 3.4 and Annex 3 - Application Form).

- 4.16 This IM and all matters arising out of or in connection with or in any way related to this IM shall be governed and construed in accordance with the laws of Ireland and shall be subject to, and Interested Parties hereby expressly submit to, the exclusive jurisdiction of the Irish courts.

## **4.2 Additional Conditions**

### **4.2.1 Open Applications**

- 4.17 All Applications (including Applications which do not ultimately become qualifying Applications) by Applicants comprise offers which must remain open and valid for six (6) months from the date of submission. Applications are contractually binding offers and the submission of an Application shall mean the Applicant unconditionally offers to agree to:

- i. the provisions of this Chapter;
- ii. the Applicant Declaration which forms part of the Application (see Annex 3:); and
- iii. the Award Rules and Transition Rules described in Section 4.2.3 below.

- 4.18 Offers shall be deemed to be accepted (meaning that an agreement covering (i), (ii) and (iii) above has been formed between the Applicant and ComReg) once they are submitted to ComReg in accordance with the IM and an acknowledgment of receipt has been issued by ComReg even if they subsequently do not become qualifying Applications.

- 4.19 All Applications will be assessed in accordance with Section 3.4 of this IM.

- 4.20 For the avoidance of doubt, the contract described in this Section 4.2.1 is in addition to and not in substitution for the contract described in Para 4.15 above, which binds all parties in receipt of this IM to the provisions of this Chapter.

### **4.2.2 Canvassing**

- 4.21 Interested Parties must not canvass directly or indirectly any staff or the Commissioners of ComReg or any person associated in any way with the Award Process. Failure to comply with this requirement may result in an Application being deemed invalid or disqualification from the Award Process. This does not restrict an Applicant from making any representations through the communications channels specified in this IM.

### **4.2.3 Award and Transition Rules / Bidder behaviour / Improper Influence**

4.22 The Award Process and Award Rules described in this IM and its Annexes shall form part of the agreement between ComReg and Applicants described in Section 4.2.1 above and by submitting an Application, the Applicant agrees to be bound by and to comply with the Award Rules and the Transition Rules. Without prejudice to the detailed Award Rules around Bidder behaviour and for the avoidance of doubt, any attempt by Interested Parties to improperly influence, in any way, the Award Process, may result in the disqualification of that/those Interested Parties or, where the party engaging in such behaviour is an agent, that agent's principal. Non-exhaustive examples of such improper influence are collusion, price fixing, bid rigging, bid rotation, market division or breach of Award Process confidentiality. If an Applicant or Bidder becomes aware of a breach of any Award Rules, it shall notify ComReg immediately and without delay regardless of whether that breach arose through the actions of that Applicant or Bidder or any other entity referred to in this IM.

### **4.2.4 Publicity information disclosure**

4.23 No publicity whatsoever regarding this IM and/or Award Process is permitted unless and until ComReg has consented in writing, at its discretion, to the relevant communication. For the avoidance of doubt, this publicity prohibition shall prevent Interested Parties and/or their agents from making any public statements or statements likely to be made public whatsoever concerning the Award Process and/or this IM.

4.24 ComReg may issue such communications and generate such publicity in relation to the Award Process as it considers appropriate and without notice to Interested Parties. ComReg, subject to its guidelines on the treatment of Confidential Information<sup>36</sup>, in particular, has the right to publicise or otherwise disclose any information regarding the Award Process, the identity of Applicants (including the identity of their members, sub-contractors and agents), successful Bidders or the granting of related Licence or Licences at any time.

4.25 Before, during or after the Award Process ComReg may receive a request made pursuant to applicable law (including the Freedom of Information Act 2014) to disclose particular information. ComReg is not liable or responsible under any circumstances for any losses, claims or damages of any kind incurred as a result of the good faith disclosure of any information purportedly pursuant to law, which occurs before, during or after the Award Process. It is the sole responsibility of

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<sup>36</sup> ComReg Guidelines on the treatment of confidential information, Document 05/24.

a Bidder to determine if any of the information it supplies in the course of the Award Process should not be disclosed because of its sensitivity.

#### **4.2.5 Errors**

4.26 If Interested Parties discover any error or omission or lack of clarity in this IM, such Interested Parties must immediately notify ComReg in writing of such error, omission or lack of clarity which will be resolved by ComReg in such manner as it considers appropriate.

#### **4.2.6 No Warranty and Termination**

4.27 The publication of this IM does not warrant or imply that any Interested Party will be awarded a Licence or Licences.

4.28 ComReg will act at all times to a standard expected of a public body and in line with its statutory functions, objectives and duties. ComReg reserves the right, for any reason whatsoever at its discretion:

- to reject Applications which do not comply with the Award Rules;
- not to proceed with any part of the Award Process described in this IM;
- not to provide an Interested Party with any additional information;
- not to implement any arrangement contemplated by this IM;
- to withdraw from any discussions or consultation which ComReg might engage or have engaged in;
- to suspend the Award Process at any time;
- not to award any Licence or Licences;
- to procure the award of a Licence or Licences by alternative means; and/or
- to terminate the Award Process at any time.

#### **4.2.7 Own Costs**

4.29 Each Interested Party shall be fully responsible for the entirety of all expenses and/or costs it incurs in the preparation or submission of an Application or in participating in the Award Process. Save as otherwise expressly stated in this IM, ComReg is not responsible for and will not pay for any expense or cost incurred or loss suffered by an Interested Party in the preparation or submission of its Application, its participation in the Award Process or otherwise. Further, ComReg is not responsible for any travel or accommodation costs incurred by Interested Parties unless previously agreed in writing by ComReg.

4.30 This applies in all cases, including if the Award Process is suspended or terminated for any reason whatsoever.

#### **4.2.8 Waiver**

4.31 The failure or neglect by ComReg to enforce any provision of the IM is not (and will not be deemed to be) a waiver of that provision and does not prejudice ComReg's right to take subsequent action in respect of such provision.

#### **4.2.9 Amendments**

4.32 ComReg reserves, at its discretion, the right, at any time until the conclusion or termination of the Award Process, to amend or modify this IM or Award Process in any respect, including the shortening or extension of any and all timelines, by way of clarification, addition, deletion or otherwise. ComReg will inform Interested Parties of any such amendments or modifications, if appropriate.

#### **4.2.10 Conclusion of Process**

4.33 The conclusion of the Award Process as set out in Section 3.10, shall be without prejudice to the accrued rights, and obligations of ComReg and Interested Parties pursuant to this Chapter. The provisions of this IM shall continue to bind ComReg and/or Interested Parties, to the extent that each of these provisions has become applicable to an Interested Party during the Award Process, after the conclusion of the Award Process.

4.34 Additional continuing obligations are imposed on Applicants pursuant to the contract formed by Section 4.2.1 of this Chapter.

# Annex 1: Glossary

## A1.1 Definitions

A 1.1 The definitions in this glossary shall apply to this draft IM as a whole save that they shall not apply to the final Draft Regulations in Annex 2.

A 1.2 Where a term in this glossary is defined by reference to a definition in a section or paragraph and an explanation of that term is provided in this glossary, the latter explanation is for convenience only and reference should be made to the appropriate part of the document for the definitive meaning of that term in its appropriate context.

A 1.3 Any reference to any provision of any legislation shall include any modification re-enactment or Extension thereof.

A 1.4 Any reference to an Interested Party shall include that Interested Party's successors and assigns.

A 1.5 The headings contained in this IM are inserted for convenience of reference only and shall not in any way form part of or affect or be taken into account in the construction or interpretation of any provision of this draft IM or the Annexes or Schedules hereto.

A 1.6 Terms defined in this draft IM shall, unless the context otherwise requires or admits, have the meaning set out below:

|                     |   |
|---------------------|---|
| 26 GHz Band         | The radio frequency spectrum in the range 24.250 GHz – 27.550 GHz.  |
| 26 GHz Band Licence | A Licence issued under Schedule 1 of the Regulations which entitles the holder to use certain specific Lots in the 26 GHz band, subject to the terms and conditions set out therein.  |
| Additional Price    | The Additional Price for a Winning Bidder, if any, is the price associated with the assignment of specific Lots to this Winning Bidder as determined in the Assignment Stage of this Award Process.   |
| Apparatus           | “Apparatus” means apparatus for wireless telegraphy as defined in section 2 of the Act of 1926 that (a) in relation to a 26 GHz Band Licence utilises radio frequencies in the range 24.745 – 25.277 GHz paired with 25.753 – 26.285 GHz to provide Point-to-Point Block Services, or (b) in relation to a 26 |

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|                       | GHz Band Interim Licence utilises radio frequencies in the range 24.773 – 25.277 GHz paired with 25.781 – 26.285 GHz to provide Point-to-Point Block Services or Point-to-Multipoint Services   |
| Applicant             | An entity that submits an Application to ComReg to be assigned at least one of the Lots being made available in the Award Process.  |
| Applicant Declaration | Part 2 of the Application Form.   |
| Application           | The Application to participate in the Award Process made by an Applicant.<br><br>A valid Application is a binding commitment to pay up to the highest value Bid Amount submitted for any Bid specified on the Applicant's Lot Application Form.   |
| Application Date      | The date by which Interested Parties must submit an Application to participate in the Award Process together with the required monetary Deposit.  |
| Application Form      | The Application Form, as set out in Annex 3: of this Document, to be delivered as part of an Application consisting of: <ul style="list-style-type: none"> <li>• Part 1: Administrative Information</li> <li>• Part 2: Applicant Declaration</li> <li>• Part 3: Lot Application Form</li> <li>• any supporting documentation required to be delivered including Ownership Structure.</li> </ul> |
| Application Stage     | The stage of the Award Process described in section 3.4 of this IM, which runs from the day on which the IM is published up to and including the Application Date.  |
| Assessment Stage      | The stage of the Award Process used to determine the number of frequency-generic Lots to be assigned to Bidders, and the Base Prices that Winning Bidders will be required to pay.  |

|                       |   |
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| Assignee              | Assignee means a party to whom some or all of the rights and obligations under a Licence have been transferred.   |
| Assignment Bid        | A bid submitted during the Assignment Round by a Winning Bidder for an Assignment Option.   |
| Assignment Bid Amount | The monetary amount associated with an offer made by a Winning Bidder for an Assignment Option.   |
| Assignment Option     | The set of frequency assignments that could be assigned to a Winning Bidder in one or more Feasible Frequency Plans.  |
| Assignment Round      | A round where a Winning Bidder may bid for alternative frequency assignments corresponding to the Lots won in the Assessment Stage.   |
| Assignment Stage      | The stage of the Award Process where Winning Bidders are assigned specific Lots in accordance with the number of frequency-generic Lots they have won based on the Bids submitted in the Application Stage. |
| Assignor              | Assignor means the party from whom some or all of the rights and obligations under a Licence have been transferred.   |
| Associate             | As defined in Annex 6 of the IM.  |
| Associated Bidders    | As defined in Annex 6 of the IM.  |
| Award Rules           | Rules and procedures relating to the Award Process, as presented in this IM and its Annexes.  |
| Auction               | The mechanism within the Award Process used to determine Winning Bidders and Winning Prices based on the demand expressed by Applicants for Lots  |
| Auctioneer            | ComReg.   |
| Authorised Agent      | A person who the Applicant has notified ComReg is entitled to bind an Applicant contractually in relation to the Award Process.   |

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|-------------------|---|
| Award Process     | The overall process through which it is intended that rights of use of the Award Spectrum will be granted in the event that at least one Applicant submits a valid Application, which by definition must include a Valid Bid.   |
| Award Rules       | Rules and procedures relating to the Award Process, as presented in this Information Memorandum and its Annexes.  |
| Award Spectrum    | The 26 GHz spectrum in respect of which rights of use are being made available in the Award Process as set out in Section 2.1.  |
| Base Price        | The price to be paid by a Winning Bidder for the number of Lots allocated to it in the Assessment Stage of the Auction (determined using a second price rule).  |
| Bid               | A binding offer to buy a number of frequency-generic Lots at a price not exceeding a specific monetary amount (the Bid Amount).   |
| Bid Amount        | The monetary amount associated with an offer made by a Bidder for a specified number of frequency-generic Lots. The Bid Amount must be at least the sum of the Reserve Prices of all the specified frequency-generic Lots under consideration and must be in whole Euros. |
| Bidder            | An Applicant that submitted a valid Application in the Application Stage that was approved by ComReg in the Qualification Stage, qualifying them to be allocated Lots in the Assessment Stage.  |
| Bidding Group     | A Bidder and its Connected Persons as defined in Annex 6 of the Information Memorandum.   |
| Commencement Date | The date on which a new 26 GHz National Block Licence of 10 years duration are issued to a Winning Bidder.  |
| Competition Caps  | Explicit maximum limits set on the amount of spectrum that any one Bidder can be awarded in the Award Process. All Bidders are subject to a Competition Cap of 5 Lots. The  |

|                              |  |
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|                              | Competition Cap only applies for the duration of the Award Process.  |
| Confidential Information     | Details of what may constitute Confidential Information for the purposes of this Award Process are provided in subsection Section 3.4.5 of the IM.   |
| Connected Person             | As defined in Annex 6 of the IM.   |
| Controlled Person            | As defined in Annex 6 of the IM.   |
| Controlling Person           | As defined in Annex 6 of the IM.   |
| CPI                          | Consumer Price Index published by the Central Statistics Office.   |
| Deposit                      | A monetary amount submitted by an Applicant as part of its Application to be allocated Lots in the Award Process. For an Application to be valid, the amount of an Applicant's Deposit must be equal to the highest Bid Amount specified by the Applicant in its Lot Application Form. |
| Deposit Call                 | A notice given by ComReg to one or more Bidders that they need to increase their Deposits as described in this information Memorandum  |
| Existing Licence             | A Licence currently held under the <b>Wireless Telegraphy (National Point-to-Point and Point-to-Multipoint Block Licences) Regulations S.I. 762 of 2007</b>  |
| Existing Licensee            | A holder of an Existing Licence.   |
| Feasible Combination of Bids | Shall have the meaning ascribed to it in Section 3.6.1 of the IM.  |
| Feasible Frequency Plan      | An assignment of frequencies to Winning Bidders in which each receives the number of blocks determined in the Assessment Stage as a contiguous (duplex) frequency range and none of these ranges coincide.   |

|  |   |
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| Frequency Plan                           | The frequency assignments established following the Assignment Stage.   |
| General Authorisation                    | An authorisation for an undertaking to provide an electronic communications network or service under and in accordance with Regulation 4 of the Authorisation Regulations.  |
| Indexation                               | The adjustment of prices for inflation. The index of inflation that will be used will be the Consumer Price Index as published by the Central Statistics Office.  |
| IM                                       | This Information Memorandum including all of the Annexes and Schedules thereto.   |
| Insider                                  | Shall have the meaning ascribed to it in Para 3.70.   |
| Interested Party                         | Includes, to the extent that the context requires or admits, any of the following:<br><br><ul style="list-style-type: none"> <li>(vi) a respondent to Consultation Document 17/70;</li> <li>(vii) a prospective Bidder;</li> <li>(viii) an Applicant;</li> <li>(ix) a Bidder; or an agent of any of the foregoing.</li> </ul> |
| Licence                                  | (x) A 26 GHz Band Licence and "Licensee" shall be construed accordingly.  |
| Lot                                      | A 2 x 28 MHz block of the Award Spectrum. Each Lot has two specific frequency ranges associated with it, one of which is used for uplink and one of which is used for downlink. Further details regarding the specific frequencies for the 19 lots in the Award Spectrum are provided in Table 2.                             |
| Lot Application Form                     | Part 3 of the Application Form.   |
| Non-Interference and Non-Protected Basis | The use of Apparatus is subject to no Harmful Interference being caused to any Radiocommunication Service, and that no claim may be made for the protection of Apparatus used on this basis against Harmful Interference originating from Radiocommunication Services.  |

|                              |  |
|------------------------------|--|
| Notification and Grant Stage | The stage of the Award Process during which Deposits (minus any applicable Upfront Fees or portion of deposits forfeited for breaches of the Award Rules) are returned to Bidders and 26 GHz Band Licences are granted to Winning Bidders. |
| Opportunity Cost             | Shall have the meaning ascribed to it in Para 3.133.   |
| Ownership Structure Document | Shall have the meaning ascribed to it in Para 3.36.  |
| Payment Deadline             | The last day upon which Winning Bidders can increase their Deposits to the level of their Upfront Fee in order to receive a Licence for the Lots assigned to them within the Award Process.  |
| Qualification Stage          | A stage of the Award Process during which ComReg assesses the Applications submitted before the Application Date, evaluates which Applications are valid, and determines which Applicants qualify to become Bidders in the Award Process.  |
| Radiocommunication Service   | A service as defined in the Radio Regulations of the International Telecommunication Union involving the transmission, emission or reception of radio waves for specific telecommunication purposes.                                       |
| Reserve Price                | The minimum Bid Amount required in a Bid for an individual Lot for such a Lot to be assigned to a Bidder.  |
| Spectrum Access Fee (SAF)    | A once-off fee paid by a Winning Bidder for its 26 GHz Band National Block Licence at the conclusion of the Award Process; and   |
| Spectrum Usage Fee (SUFs)    | Annual Fees which a successful Bidder must pay in respect of spectrum rights of use assigned in the Award Process.   |

|                           |  |
|---------------------------|--|
| Transition Activities     | Adjustments as may be required by Existing Licensees to their existing networks and may involve relocating or retuning of existing spectrum assignments.   |
| Transition                | Relocating or retuning of existing spectrum assignments.   |
| Transition Plan           | A plan which outlines interim milestones for retuning and relocation activities for Existing Licensees.  |
| Transition Plan Proposals | Formulated by Winning Bidders and Existing Licensees who have agreed to abide by the Transition Rules.   |
| Transitional Rules        | Rules regarding Transition, as set out in Section 3.9 of this document   |
| Unsuccessful Bidder       | An Interested Party that submits an Application to ComReg to be allocated Lots in the Award Process, is declared a Bidder in the Qualification Stage, but is not allocated any Lots in the Assessment Stage of the Award Process.  |
| Upfront Price/Upfront Fee | The Winning Price to be paid by a Winning Bidder for the spectrum to be assigned to it as a result of the Award Process.<br><br>The Upfront Fee to be paid by each Winning Bidder prior to a receipt of 26 GHz National Block Licence will be the sum of its Base Price plus its Additional Price. |
| Valid Bid                 | A Bid submitted in an Application that is in accordance with the Award Rules, and which specifies a Bid Amount that is greater than or equal to the sum of the Reserve Prices of all Lots in the Bid.  |
| Winning Bid               | A Bid in respect of which a Winning Bidder is assigned at least one Lot.   |
| Winning Bidder            | A Bidder that wins at least one Lot in the Award Process.  |

|                    |  |
|--------------------|--|
| Winning Allocation | A combination of Winning Bids. The value of a Winning Allocation is the total of winning Bid Amounts plus the value of any unassigned Lots at Reserve Prices |
| Working Day        | Working Day means a day which is not a Saturday or Sunday or a public holiday as defined in section 2(1) of the Organisation of Working Time Act 1997.       |

## A2.2 European and Governmental Bodies, Regulatory and Standardisation Organisations

|        |  |
|--------|--|
| ComReg | Commission for Communications Regulation |
| EC     | European Commission                      |
| EU     | European Union                           |

## A2.3 Primary and Secondary Legislation

|                           |  |
|---------------------------|--|
| SI                        | Statutory Instrument   |
| 2002 Act                  | The Communications Regulation Act 2002 (No. 20 of 2002), as amended <sup>37</sup>  |
| Act of 1926               | The Wireless Telegraphy Act 1926 (No. 45 of 1926) as amended   |
| Authorisation Regulations | European Communities (Electronic Communication Networks and Services) (Authorisation) Regulations 2011 (S.I. No 335 of 2011) |
| Framework Directive       | Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for      |

<sup>37</sup> Amendments include but are not limited to those effected by the Communications Regulation (Amendment) Act 2007 and the Communications Regulation (Premium Rate Services and Electronic Communications Infrastructure) Act 2010.

|                       |   |
|-----------------------|---|
|                       | electronic communications networks and services, as amended   |
| Framework Regulations | European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. No 333 of 2011) |
| The Minister          | Minister for Communications, Climate Action and Environment   |
| Specific Regulations  | Specific Regulations has the same meaning as set out in Regulation 2 of Framework Regulations 2011 (S.I. No. 333 of 2011) |

## A2.4 Glossary of Technical Terms

|                      |  |
|----------------------|--|
| FDD                  | Frequency Division Duplex  |
| TDD                  | Time Division Duplex   |
| GHz                  | Gigahertz (1,000,000,000 Hertz)  |
| Harmful Interference | Bears the meaning ascribed to it in the Framework Regulations being: interference which endangers the functioning of a radio navigation service or other safety services or which otherwise seriously degrades, obstructs or repeatedly interrupts a Radio communications service operating in accordance with a requirement under the International Telecommunication Union Radio Regulations, a Regulation of the European Union or legislation giving effect to an act, or a provision of an act, adopted by an institution of the European Union relating to the provision of an electronic communications service, electronic communications network or an associated facility or the radio frequency spectrum or regulations made under the Act of 1926. |
| Hertz                | Unit of Frequency  |
| MHz                  | Megahertz (1,000,000 Hertz)  |
| SAF                  | Spectrum Access Fee  |
| SUF                  | Spectrum Usage Fee   |



## Annex 2: **Draft Regulations**

This annex contains a draft of the proposed P2P Regulations, reflecting ComReg's preliminary views as of the date of publication of the IM. Any final version of the P2P Regulations, made by ComReg under section 6 of the Wireless Telegraphy Act 1926, shall be subject to the consent of the Minister for Communications Climate Action and Environment under section 37 of the Communications Regulation Act 2002. ComReg may also make such editorial amendments to the text of any final P2P Regulations as it considers necessary and without further consultation, where such amendments do not affect the substance of the final P2P Regulations.

### **WIRELESS TELEGRAPHY (NATIONAL POINT-TO-POINT BLOCK LICENCES) REGULATIONS, 2018**

Notice of the making of this Statutory Instrument was published in "Iris Oifigiúil" of [XX] 2018.

The Commission for Communications Regulation, in exercise of the powers conferred on it by section 6(1) of the Wireless Telegraphy Act, 1926 (No. 45 of 1926) as amended by the Communications Regulation (Amendment) Act, 2007 (No. 22 of 2007), and with the consent of the Minister for Minister for Communications Climate Action and Environment pursuant to section 37 of the Communications Regulation Act 2002, hereby makes the following Regulations:

#### **Citation and Commencement**

1. (1) These Regulations may be cited as the Wireless Telegraphy (National Point-to-Point Block Licences) Regulations, 2018.
- (2) These Regulations come into force on the [XX] 2018.

#### **Interpretation**

2. (1) In these Regulations—

"2007 Regulations" means the Wireless Telegraphy (National Point-to-Point and Point-to-Multipoint Block Licences) Regulations, 2007 (s.i. 762 of 2007);

"26 GHz Band" means the part of the radio frequency spectrum consisting of 3 300 MHz in the range 24.250 – 27.550 GHz;

"26 GHz Band Licence" means a licence in the form set out in Schedule 1 to keep and have possession of Apparatus in the State in accordance with and subject to the terms and conditions contained in the licence;

“26 GHz Band Interim Licence” means a licence in the form set out in Schedule 3 to keep and have possession of Apparatus in the State in accordance with and subject to the terms and conditions contained in the licence;

“Act of 1926” means the Wireless Telegraphy Act 1926 (No. 45 of 1926);

“Act of 1972” means the Wireless Telegraphy Act, 1972 (No. 5 of 1972);

“Act of 2002” means the Communications Regulation Act 2002 (No. 20 of 2002);

“Apparatus” means apparatus for wireless telegraphy as defined in section 2 of the Act of 1926 that (a) in relation to a 26 GHz Band Licence utilises radio frequencies in the range 24.745 – 25.277 GHz paired with 25.753 – 26.285 GHz to provide Point-to-Point Block Services, or (b) in relation to a 26 GHz Band Interim Licence utilises radio frequencies in the range 24.773 – 25.277 GHz paired with 25.781 – 26.285 GHz to provide Point-to-Point Block Services or Point-to-Multipoint Services;

“Authorisation Regulations” means the European Communities (Electronic Communications Networks and Services) (Authorisation) Regulations 2011 (S.I. 335 of 2011);

“Award” means the competitive award procedure used by the Commission for the purpose of granting Licences and as detailed in the Information Memorandum;

“Award Rules” means the rules and procedures relating to the Award as set out in the Information Memorandum;

“Commission” means the Commission for Communications Regulation established under the Act of 2002;

“CPI” means the Consumer Price Index as published from time to time by the CSO;

“CPI Adjustment” means a negative or positive adjustment to a Spectrum Usage Fee, calculated using the CPI according to the methodology set out in the Information Memorandum;

“CSO” means the Central Statistics Office or its successor;

“electronic communications network” and “electronic communications service” have the meanings assigned to them in the Framework Regulations;

“Equivalent Isotropically Radiated Power” (EIRP) means the product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna;

“Existing Licensee” has the meaning set out in the Information Memorandum;

“Framework Regulations” means the European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (S.I. 333 of 2011);

“General Authorisation” means an authorisation for an undertaking to provide an electronic communications network or service under and in accordance with Regulation 4 of the Authorisation Regulations;

“harmful interference” has the meaning set out in the Framework Regulations;

“Information Memorandum” means the document published by the Commission on [XX] 2018 and bearing the Commission Document number 18/XX and which details the processes and procedures the Commission will follow in running the Award, as may be updated from time to time;

“Licence” means a 26 GHz Band Licence and/or a 26 GHz Band Interim Licence, as is applicable and apparent from the context;

“Licence Commencement Date” means the date specified in a Licence upon which the Licence comes into effect;

“Licensee” means the holder of a Licence;

“non-exclusive” in relation to a Licence means that the Commission is not precluded from authorising the keeping and having possession by persons other than the Licensee, on a non-interference and non-protected basis, of apparatus for wireless telegraphy in the radio frequency spectrum specified in the Licence;

“non-interference and non-protected basis” means that the use of Apparatus is subject to no harmful interference being caused to any radiocommunication service, and that no claim may be made for the protection of Apparatus used on this basis against harmful interference originating from radiocommunication services;

“R&TTE Regulations” means the European Communities (Radio Equipment and Telecommunications Terminal Equipment) Regulations 2001 (S.I. No. 240 of 2001);

“radiocommunication Service” means a service as defined in the Radio Regulations of the International Telecommunication Union involving the transmission, emission or reception of radio waves for specific telecommunication purposes;

“Point-to-Point Service” means a service consisting of the provision of point-to-point fixed services;

“Point-to-Multipoint Service” means a service consisting of the provision of point-to-multipoint fixed services;

“Spectrum Access Fee” means a once-off fee paid to the Commission by a Winning Bidder at the conclusion of the Award and in advance of being granted a 26 GHz Band Licence;

“Spectrum Usage Fee” means an annual fee paid to the Commission by a Licensee for its 26 GHz Band Licence;

“Transition Plan” has the meaning set out in the Information Memorandum;

“Undertaking” has the meaning set out in the Framework Regulations;

“Upfront Fee” has the meaning set out in the Information Memorandum;

“Winning Bidder” has the meaning set out in the Information Memorandum; and

“Working Day” means a day which is not a Saturday or Sunday or a public holiday.

(2) In these Regulations:

(a) a reference to an enactment or regulation shall be construed as a reference to the enactment or regulation as amended or extended by or under any subsequent enactment or regulation;

(b) a reference to a Regulation or a Schedule is to a Regulation of or Schedule to these Regulations unless it is indicated that a reference to some other enactment is intended;

(c) a reference to a paragraph or subparagraph is to the paragraph or subparagraph of the provision in which the reference occurs unless it is indicated that reference to some other provision is intended;

(d) a reference to a Directive of the European Parliament and Council shall be the Directive as amended or extended by any subsequent Directive; and

(e) a reference to a Decision of the European Commission shall be the Decision as amended or extended by any subsequent Decision.

(3) A word or expression that is used in these Regulations and that is also used in the Act of 1926 has, unless the context otherwise requires, the same meaning in these Regulations that it has in that Act.

(4) A word or expression that is used in these Regulations and that is also used in the Act of 2002 has, unless the context otherwise requires, the same meaning in these Regulations that it has in that Act.

(5) A word or expression that is used in these Regulations and that is also used in the Framework Regulations or in the Authorisation Regulations has, unless the

context otherwise requires, the same meaning in these Regulations that it has in those Regulations.

(6) The Interpretation Act 2005 (No. 23 of 2005) applies to these Regulations.

### **Licences to which these Regulations apply**

3 (1) These Regulations apply to 26 GHz Band Licences and to any 26 GHz Band Interim Licence as may be granted for the purposes of completing the Award.

### **Application for the Grant and Form of Licences**

4. (1) A Winning Bidder may submit an application to the Commission to be granted a Licence, to include the assignment of such rights of use for radio in frequencies in the 26 GHz band as have been determined in accordance with the Information Memorandum and the outcome of the Award and subject to payment by the Winning Bidder of all applicable fees in respect of the Licence.

(2) An application for a Licence under paragraph (1) shall be in writing and shall be in such form as may be determined by the Commission from time to time and the Commission may grant a Licence in accordance with the relevant provisions of the Authorisation Regulations.

(3) A Winning Bidder who applies to be granted a Licence shall furnish to the Commission such information as the Commission may reasonably require for the purposes of its functions under these Regulations and the Authorisation Regulations and the Commission may refuse to grant a Licence to any Winning Bidder who, without reasonable cause, fails to comply with a requirement to furnish any such information.

(4) A 26 GHz Band Licence to which these Regulations apply shall be in the form specified in Schedule 1, with such variation, if any, whether by addition, deletion or alteration as the Commission may determine from time to time or in any particular case.

(5) A 26 GHz Band Interim Licence to which these Regulations apply shall be in the form specified in Schedule 2, with such variation, if any, whether by addition, deletion or alteration as the Commission may determine from time to time or in any particular case.

### **Duration of Licences and Interim Licence**

5. (1) The commencement date of a 26 GHz Band Licence shall be such date as may be specified by the Commission. Unless it has been withdrawn or had its duration reduced under Regulation [ ], a 26 GHz Band Licence shall be of no more than ten

years duration such that it shall expire in full on the tenth anniversary of its commencement date.

(2) The commencement date of a 26 GHz Band Interim Licence shall be 6<sup>th</sup> June 2018 and its duration shall be set by the Commission and specified in the 26 GHz Band Interim Licence, noting that the duration of any 26 GHz Band Interim Licence shall be no longer than is necessary to complete the Award and any Transition Plan as may be required.

### **Conditions of Licences**

6. (1) Any Licensee that is granted a Licence under these Regulations and to which these Regulations apply shall:

- (i). ensure that it complies with the conditions in its Licence and with these Regulations;
- (ii). ensure that all Apparatus installed, maintained, possessed or kept under the Licence is capable of operating within the radio frequencies specified in the Licence;
- (iii). ensure that all Apparatus worked or used under the Licence is worked or used only in the radio frequencies specified in the Licence;
- (iv). comply with any rules to prevent spectrum hoarding as may be laid down by the Commission under the Framework Regulations;
- (v). ensure that it makes payment of all applicable Licence fees;
- (vi). furnish to the Commission such information in respect of the Licence as may be required by the Commission from time to time;
- (vii). ensure that all Apparatus under the Licence, or any part thereof, is installed, maintained, and used so as not to cause Harmful Interference;
- (viii). ensure that the Apparatus under the Licence, or any part thereof, complies with the R&TTE Regulations;
- (ix). comply with any special conditions imposed under section 8 of the Act of 1972;
- (x). notify the Commission not less than 6 months prior to the proposed cessation of use of any terrestrial system listed in Part 2 of the Licence concerned and

use all reasonable endeavours to ensure that any adverse effects on users caused by the cessation of use of a terrestrial system are minimised;

- (xi). upon becoming aware of any event likely to materially affect its ability to comply with these Regulations, or any conditions set out or referred to in any Licence, notify the Commission of that fact in writing no later than 5 Working Days upon becoming aware; and
- (xii). comply with all obligations under relevant international agreements relating to the use of Apparatus or the frequencies to which they are assigned;

### **Enforcement, Amendment, Withdrawal and Suspension**

7. (1) The Commission shall enforce compliance with the conditions attached to a Licence in accordance with the Authorisation Regulations.

(2) The Commission may amend any Licence from time to time in accordance with the Authorisation Regulations.

(3) The Commission may suspend or withdraw a Licence in accordance with the Authorisation Regulations, including where it emerges that a Licensee breached one or more of the Award Rules during its participation in the Award.

### **Licence Fees**

8. (1) The fees payable to the Commission for a 26 GHz Band Licence granted on foot of the Award shall consist of a single Spectrum Access Fee and annual Spectrum Usage Fees.

(2) The amount, in Euros, of all Spectrum Access Fees and Spectrum Usage Fees for any Licence shall be determined in accordance with the Information Memorandum and/or the outcome of the Award, including any adjustments or refunds to such fees as may apply as a consequence of the outcome of the Award.

(3) The Spectrum Usage Fee for any period of less than one year shall be calculated on a pro rata daily basis for such period.

(4) The Spectrum Usage Fee for any 26 GHz Band Interim Licence shall be calculated on a pro rata daily basis in accordance with the Information Memorandum and by reference to the Spectrum Usage Fee which applied to the equivalent licence granted under the 2007 Regulations, on the date on which that licence expired (5<sup>th</sup> June 2018).

(5) Where the commencement date of a 26 GHz Band Licence is delayed due to circumstances as described in the Information Memorandum, the Licensee

concerned shall be entitled to an adjustment of the Licence Fees payable or a refund of Licence Fees already paid, as provided for in the Information Memorandum.

(6) All Spectrum Access Fee and Spectrum Usage Fees, less any applicable adjustments or refunds, shall be paid to the Commission on the dates specified by the Commission and in the manner specified in the Information Memorandum.

(7) If a 26 GHz Band Licence is suspended or withdrawn, the Licensee shall not be entitled to be repaid any part of the Spectrum Access Fee or Spectrum Usage Fee paid by the Licensee under this Regulation, but shall still be liable to pay any sums, including interest, that are outstanding.

(8) If the amount of radio frequency spectrum specified in a 26 GHz Band Licence is reduced, the Licensee may be entitled to a refund of the relevant Spectrum Usage Fees already paid and to a reduction on future Spectrum Usage Fees, on a pro rata basis having regard to the nature of the amendment. The Licensee shall not be entitled to any refund of its Spectrum Access Fee.

(9) If the duration of a 26 GHz Band Licence is reduced at the request of the Licensee, the Licensee may be entitled to a refund of Spectrum Usage Fees already paid, on a pro rata basis having regard to the reduced duration. The Licensee shall not be entitled to any refund of its Spectrum Access Fee.

(10) Failure by a Licensee to pay a required fee under this Regulation on or before the date it falls due shall constitute non-compliance by the Licensee concerned with these Regulations and the Commission, in respect of such non-payment of a fee, may take enforcement action in accordance with Regulation 7 and may take steps to recover the amount due in accordance with paragraphs 11 and 12 of this Regulation.

(11) Where a fee or part of a fee is not paid in time, the Licensee concerned shall pay to the Commission interest on the fee or part thereof that was or is outstanding. Interest shall accrue from the date when such fee or part thereof fell due until the date of payment of such fee or part thereof and shall be calculated at the same rate payable in respect of late payments in commercial transactions pursuant to the European Communities (Late Payment in Commercial Transactions) Regulations 2012, ( S.I. No. 580 of 2012 ).

(12) Any fee payable and owed by a Licensee under this Regulation may be recovered by the Commission from the Licensee as a simple contract debt in any court of competent jurisdiction.

### **Licensee to satisfy all legal requirements**

9. (1) Licences granted pursuant to these Regulations do not grant to the Licensee any right, interest or entitlement other than to keep, have possession of, install,

maintain, work and use Apparatus for wireless telegraphy for terrestrial systems capable of providing electronic communications services, in the State.

**Revocation of the 2007 Regulations**

10. The Wireless Telegraphy (National Point-to-Point and Point-to-Multipoint Block Licences) Regulations, 2007 (s.i. 762 of 2007) are hereby revoked.

**SCHEDULE 1**

**WIRELESS TELEGRAPHY ACT, 1926**

**Wireless Telegraphy (National Point-to-Point Licences) Regulations**

**National Point to Point Block Licences**

The Commission, in exercise of the powers conferred on it by section 5 of the Wireless Telegraphy Act, 1926 (No. 45 of 1926) and Section 9(1) of the Communications Regulation Act, 2002 (No. 20 of 2002) grants the following licence to **[INSERT LICENSEE NAME]** of **[INSERT LICENSEE ADDRESS]** (“the Licensee”). The Licensee is hereby authorised to keep, have possession of, install, maintain, work and use apparatus as specified in part one of this Licence subject to the Licensee observing the conditions contained in this licence and in Regulation 8 of the Wireless Telegraphy (National Point-to-Point Block Licences) Regulations, 2018 ( S.I. No. X of 2018 )

This Licence shall come in to effect on DD/MM/YYYY and subject to revocation, suspension or withdrawal, expires on DD/MM/YYYY

Signed: \_\_\_\_\_

For and on behalf of the Commission for Communications Regulation

Date of Issue: \_\_\_\_\_

Official Stamp

Part One

Statement of authorised Apparatus

To include:

Description of apparatus

Places at which the Licensee is authorised to keep and have possession of the Apparatus.

Technical restrictions

Details of spectrum

**SCHEDULE 2**

WIRELESS TELEGRAPHY ACT, 1926

Wireless Telegraphy (National Point-to-Point Licences) Regulations

Interim National Point to Point Block Licences

The Commission, in exercise of the powers conferred on it by section 5 of the Wireless Telegraphy Act, 1926 (No. 45 of 1926) and Section 9(1) of the Communications Regulation Act, 2002 (No. 20 of 2002) grants the following licence to **[INSERT LICENSEE NAME]** of **[INSERT LICENSEE ADDRESS]** (“the Licensee”). The Licensee is hereby authorised to keep, have possession of, install, maintain, work and use apparatus as specified in part two of this Licence subject to the Licensee observing the conditions contained in this licence and in Regulation 8 of the Wireless Telegraphy (National Point-to-Point Block Licences) Regulations, 2018 ( S.I. No. X of 2018)

This Licence shall come in to effect on DD/MM/YYYY and subject to revocation, suspension or withdrawal, expires on DD/MM/YYYY

Signed: \_\_\_\_\_

For and on behalf of the Commission for Communications Regulation

Date of Issue: \_\_\_\_\_

Official Stamp

Part Two

Statement of authorised Apparatus

To include:

Description of apparatus

Places at which the Licensee is authorised to keep and have possession of the Apparatus.

Technical restrictions

Details of spectrum

GIVEN under the official seal of the Commission for Communications Regulation,

[ ] 2018

[NAME of COMMISSIONER]

For and on behalf of the Commission for Communications Regulation

The Minister for Communications Climate Action and Environment consents to the making of the foregoing Regulations.

GIVEN under the Official Seal of the Minister for Communications Climate Action and Environment,

[DATE] 2018

[NAME OF MINISTER]

Minister for Communications Climate Action and Environment,

**EXPLANATORY NOTE**

(This note is not part of the Instrument and does not purport to be a legal interpretation.)

These Regulations provide for the issue of Licences for apparatus for wireless telegraphy used solely for the provision of Point-to-Point and Point-to-Multi-point Block Services, for the regulation of such apparatus and for the payment of fees by persons granted Licences for that purpose.

# Annex 3: **Application Form**<sup>38</sup>

Applicants must complete Parts 1, 2 and 3 of this Application Form. Any additional documentation required to be supplied by the Applicant as part of its Application is to be appended to this Application Form.

## **Part 1: Administrative Information**

For an Application to be complete, the administrative information listed in Table 1 below must be provided. Note that the Applicant name provided will be that to whom licences will be awarded where relevant. Contact details for Authorised Agents are those that will be used by ComReg for circulating Assignment Options for the Assignment Round and for contacting the Bidder during the Award Process if necessary.

| <b>Information required</b>  | <b>Information provided</b> |
|--|-----------------------------|
| Name of Applicant*   | Name:                       |
| Complete postal address of registered office or, if it does not have a registered office, the principal place where it carries on business and, if different, address to which all communications will be sent regarding the Award Process | Address 1:                  |
|  |                             |
|  |                             |
|  |                             |
|  | Address 2 (if different):   |
|  |                             |
|  |                             |
|  |                             |
| Telephone/ fax number for Applicant  | Telephone:                  |
|  | Fax:                        |

<sup>38</sup> A writeable PDF format of this form will be made available on the ComReg website.

| Information required   | Information provided   |
|--|--|
| Bank details of Applicant (for the purpose of returning part or all of the Applicant's Deposit where applicable) | Name of Bank and address of relevant branch:<br><br>Account Number:<br><br>Sort Code:<br><br>BIC Code:<br><br>IBAN No: |
| Name of Applicant's Authorised Agent 1** (Block capitals)  | Name:  |
| Position of Applicant's Authorised Agent 1   | Position:  |
| Telephone numbers, fax number and e-mail address of Applicants Authorised Agent 1                                | Telephone (fixed):<br><br>Telephone (mobile):<br><br>Fax:<br><br>Email:  |
| Specimen signature of Applicant's Authorised Agent 1 Witnessed By  | Signature 1:<br><br>Name:<br><br>Position:<br><br>Signature:   |
| Name of Applicant's Authorised Agent 2*** (Block capitals)   | Name:  |

| Information required  | Information provided  |
|---|---|
| Position of Applicant's Authorised Agent 2  | Position:   |
| Telephone numbers, fax number and e-mail address of Applicants Authorised Agent 2 | Telephone (fixed):<br>Telephone (mobile):<br>Fax:<br>Email: |
| Specimen signature of Applicant's Authorised Agent 2 Witnessed By                 | Signature:<br>Name:<br>Position:<br>Signature:              |

**Table 1: Administrative information**

\* Note: In the case of Applicants that are bodies corporate, attach a certified copy of Certificate of Registration along with Articles of Association and Memorandum of Association or equivalent together with a certified translation thereof into English or Irish, where the original is not in English or Irish. Company Secretary or authorised signatory is required to certify the copy.

\*\* Note: Authorised Agents must be authorised to bind the Bidder and to take all decisions or communicate all decisions connected with the Award Process on the Bidder's behalf including, but not limited to, the authority to submit Bids in respect of any of the Lots available in the Award Process and to commit to payment of the necessary amount if the Bidder is granted spectrum. If Applicants wish to have the ability to participate in the Assignment Stage as part of an Alliance, Authorised Agents must further be authorised to delegate the power to make Assignment Stage Bids, which are binding on the Applicant on a joint and several basis with all members of the Alliance, to up to two Authorised Agents of another member of the Alliance.

\*\*\* Note: Applicants can authorise one more person, who could act as the Alternate Authorised Agent in case of unavailability of the primary Authorised Person. In case of any duplication of submissions made on behalf of the Bidder by different Authorised Agents, the submission made by the first Authorised Agent would be considered as final and binding.

Appropriate evidence of the authorisation of Authorised Agents, as per Section 3.4.1 of the IM, must be attached hereto.

## Part 2: Applicant Declaration

The terms “Award Rules”, “Associated Bidders”, “Applicant”, “Bidding Group”, “Connected Person”, “Confidential Information” and “Insider” for the purposes of this declaration shall be construed as defined in the Information Memorandum.

We, the undersigned, being Authorised Agents of [\_\_\_\_\_] (the “**Applicant**”) hereby undertake, warrant and declare, and to the extent that anything contemplated hereunder remains to be done, covenant, both on our own behalf and on behalf of the Applicant, having made all reasonable inquiries that:

1. The Applicant is entitled to submit the Application and participate in the Award Process, and the Applicant has obtained all necessary declarations of consent, permissions and approvals.
2. The Applicant has ensured and will ensure that all information and all declarations contained in the Application and appendices attached thereto are correct and accurate.
3. The Applicant has and will ensure that, until public announcement by ComReg on the outcome of the Award Process, the Applicant discloses Confidential Information only to the extent it is necessary and then, save as expressly permitted by the Information Memorandum, only to other parties within the Applicant's own Bidding Group or to persons who, prior to such disclosure, are Insiders in relation to the same Applicant and that the Applicant shall take all reasonable measures with a view to ensuring that the person who receives such Confidential Information treats it as confidential at all times until public announcement by ComReg on the outcome of the Award Process.
4. The Applicant has ensured and will ensure that the Applicant, the Applicant's employees, board of directors (where Applicant is a body corporate) and persons connected with the Applicant or Insiders refrain from disclosing Confidential Information to parties other than as specified in paragraph 3 above and from exchanging Confidential Information with other parties regarding the Applicant's strategy for obtaining and use of the Licence or Licences until public announcement by ComReg on the outcome of the Award Process.
5. Save as expressly permitted by the Information Memorandum, the Applicant will ensure that the Applicant and any Connected Persons and any Insiders - shall refrain from entering into agreements or negotiations with a view to entering into agreements with other Interested Parties or their Connected Persons in relation to matters concerning the Award Process, including without prejudice to the generality of the foregoing agreements relating to spectrum,

network or infrastructure sharing, from the time at which this Application is submitted to the date of the issue of the Licences.

6. The Applicant has ensured and will ensure that the Applicant - and, to the best knowledge of the Applicant, any Connected Persons and any Insiders - neither prior to the submission of the Application, nor after the submission thereof and until the Licences have been issued, shall enter into agreements or establish any understanding with a provider of equipment or software which:
  - regulates such provider's possibility of supplying equipment or software to another Applicant or their Connected Persons concerning the planning, establishment or operation of a network using the frequencies dealt with in this Award Process, or
  - regulate the prices or other terms and conditions that a provider of equipment or software may offer another Applicant or their Connected Persons in connection with the planning, establishment or operation of a network using the frequencies dealt with in this Award Process.

The Applicant has ensured that agreements already entered into or understandings already established, as mentioned in this paragraph 6, have been terminated, and to the best knowledge of the Applicant, any Connected Persons and any Insider have ensured that any such agreements or understandings have been terminated.

7. The Applicant has ensured and will ensure that the Applicant - and, to the best knowledge of the Applicant, any Connected Persons and any Insider - does not enter into agreements or establish any understanding with a third party, either prior to or during the Award Process, for the access to or the use of the Applicant's network or networks using the frequencies dealt with in this Award Process, if the agreement or the understanding directs such third party not to participate or limits such third party's ability to participate in the Award Process.
8. The Applicant has ensured that agreements already entered into or understandings already established, as mentioned in the above paragraph, have been terminated, including to the best knowledge of the Applicant, any Connected Persons and any Insider have ensured such agreements or understandings have been terminated.
9. The Applicant has ensured and will ensure that the Applicant – and, to the best knowledge of the Applicant, any Connected Persons and any Insiders – both prior to and after the submission of an Application and until the Licences have been issued, refrains from any action that could have an adverse effect on the Award Process.

10. The Applicant shall comply with the Award Rules as contained in the Information Memorandum including, without limitation, the provisions of Chapter 4 at all times and shall procure that its personnel, Insiders and Connected Persons, to the extent appropriate, shall also comply with the Award Rules from the date of publication of the Information Memorandum until the commencement of the Licences.
11. The Applicant has ensured and will ensure that prior to the filing of its Application, the Applicant takes all reasonable measures with a view to identifying its Connected Persons and Associated Bidders.
12. The Applicant will ensure that, in accordance with Section 3.4 of the Information Memorandum, after submitting its Application all relevant changes to its ownership structures are notified to ComReg.
13. Save as disclosed in an appendix attached to this Declaration, the Applicant (i) is not, or, in case the Applicant is a partnership, a joint venture or equivalent, the relevant partners or participants are not, nor is expected to be subject to an insolvency process including, without prejudice to the generality of the foregoing, liquidation, examinership, receivership, bankruptcy, winding-up proceedings or equivalent proceedings in other jurisdictions and (ii) is capable of paying its debts as they fall due.
14. Save as disclosed in an appendix attached to this Declaration, the Applicant is not, or, in case the Applicant is a partnership, a joint venture or equivalent, the relevant partners or participants are not, nor is expected to be involved in any disputes which may in any material and adverse way affect the Applicant's possibility of complying with the terms of the Licence, if the Applicant is awarded such Licence.
15. The Applicant agrees that any disclosure made under paragraph 13 and/or paragraph 14 above must contain sufficiently clear and detailed information to allow ComReg to assess the Applicant's capacity to participate in the Award Process, to comply with the Award Rules and to comply with the terms of the Licence. The Applicant agrees that ComReg's decision further to any assessment in this respect shall be final and that ComReg reserves the right to, where necessary and proportionate, seek further information or clarification from an Applicant, to specify the level of detail required and the timescales within which it must be provided. The Applicant agrees that any failure to cooperate fully with this disclosure requirement may result in an Applicant's Application being deemed invalid or in subsequent disqualification of the Applicant from the Award Process.

16. The Applicant agrees that, even if they are unsuccessful in becoming a Bidder, they remain bound by the Award Rules, including those on confidentiality and Bidder behaviour, until a public announcement on the outcome of the Award Process is made by ComReg.

Applicant Name: \_\_\_\_\_

For and on behalf of the Applicant:

\_\_\_\_\_

(Signature of those persons who are empowered to bind the Applicant or otherwise authorised to bind the Applicant)

Name in block capitals: \_\_\_\_\_

Date (DD/MM/YYYY):

|  |  |  |  |  |  |  |  |  |  |
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If the Applicant is a partnership, a joint venture or equivalent, the Declaration must also be signed by the relevant partners or participants:

As partner/participant:

\_\_\_\_\_

(Signature)

Name in block capitals: \_\_\_\_\_

Date (DD/MM/YYYY):

|  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
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### Part 3: Lot Application Form

The submission of this Lot Application Form as part of a complete Application represents a binding offer to pay the upfront and annual fees linked to each of the Lots specified herein in exchange for a Licence for those Lots. The Initial Bid Form, including Lots in all Lot categories, Reserve Prices and Associated Eligibility Points are presented in Table 2 below. Note that for an Initial Bid Form to be valid, it must:

- Adhere to the Award Rules on Competition Caps; and
- Be accompanied by a Deposit paid into ComReg's bank account that shall at least correspond to the sum of the Reserve Prices of Lots requested by the Applicant by the deadline of 23:59 hours on Wednesday **16 May 2017**.

All Deposits are to be paid into ComReg's bank account. Transfers to ComReg's account should be made to:

Bank of Ireland, 2 College Green, Dublin 2, Ireland.  
Account Number: 96614639  
Sort Code: 90-00-17  
BIC Code: BOFIE2D  
IBAN No: IE96 BOFI 9000 1796 6146 39

If making a bank transfer/EFT, please ensure that:

- Reference is "26 GHz Award"; and
- Your Bank quotes your Account Number (if an existing ComReg account holder) in making the transfer to ComReg.

| Information Required   | Information Provided |
|--|----------------------|
| <b>Applicant Name:</b>   |                      |
| <b>Total amount of Deposit (largest value in Bid Amount column):</b> |                      |

**Table 2: Applicant and total amount of Deposit**

| Number of Lots in Bid | Sum of Reserve Prices of all Lots in Bid (EUR) | Bid Amount (numerical form, EUR) | Bid Amount (written form) |
|-----------------------|--|----------------------------------|---------------------------|
| 1                     | 70,000   |                                  |                           |
| 2                     | 140,000  |                                  |                           |
| 3                     | 210,000  |                                  |                           |
| 4                     | 280,000  |                                  |                           |
| 5                     | 350,000  |                                  |                           |

**Table 3: Lot Application From**

For the avoidance of doubt, Applicants are requested to strike out any package for which they do not wish to submit a Bid.

Applicant Name: \_\_\_\_\_

\_\_\_\_\_

(Signature of those persons who are empowered to bind the Applicant or otherwise authorised to bind the Applicant)

Name in block capitals: \_\_\_\_\_

|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|



## Application Checklist

Tick the boxes to ensure that all the required information is included in your Application. A complete Application must consist of the following:

Part 1: Administrative Information - All sections of Table 1 completed and signed.

- Appropriate evidence for signatory of Application as specified in Section 3.3.2 of the Information Memorandum
- Ownership Structure Document as specified in Section 3.3.2

Part 2: Applicant Declaration signed

Part 3: Lot Application Form completed and signed

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## Application Procedure

The Application procedure is set out in Section 3.101 of the Information Memorandum and states that:

In order to participate as a Bidder in the Award Process, an Applicant must submit four completed and identical Application Forms on paper, including four identical copies of an Ownership Structure Document, and electronic copies of same in an editable format on CD-ROM. The container(s) in which the Application Form and Ownership Structure Documents and CD-ROM are submitted must not in any way disclose the identity of the Applicant.

ComReg will only accept applications on Working Days from **15 May 2018 to 21 May 2018** between **10.00 and 16.00 hours (Irish time)**. Applicants are required to make an appointment with ComReg to submit an Application. To make an appointment to submit an Application, Applicants are required to contact **Mr Jack O'Dwyer** on Working Days between **11 May 2018** and **18 May 2018**, and between 10:00 to 13:00 and 14:00 to 16.00 hours (Irish time) at:

**Phone: 00 353 (0)1 804 9753**

All Applications will be date and time stamped. Applicants will be given a receipt acknowledging the submission of their Application.

No Applications will be opened by ComReg until after 16:00 hours (Irish time) on the Application Date **21 May 2018**. Applications will be opened in the presence of an independent auditor.

The deadline for receipt of Deposits, as set out in Section 3.4.3, will be 23:59 hours (Irish time) on the Application Date **21 May 2018**.

## Annex 4 Example of Winner and Base Price Determination

A 3.1 This section provides a simple example to illustrate the Winner and Base Price Determination processes.

A 3.2 For simplification, we assume that there are five Lots available (rather than 19), and that the Reserve Price per Lot is €50.

A 3.3 In this example, there are three Bidders, namely Bidder 1, Bidder 2 and Bidder 3. All Valid Bids received from these bidders are presented in Table 5. Each of these Bids will be used in the Winner and Base Price Determination processes.

| <i>Bidder</i>   | <i>Number of lots in Bid</i> | <i>Bid Amount (€)</i> |
|-----------------|------------------------------|-----------------------|
| <b>Bidder 1</b> | 1                            | 80                    |
| <b>Bidder 1</b> | 2                            | 160                   |
| <b>Bidder 1</b> | 3                            | 260                   |
| <b>Bidder 2</b> | 2                            | 140                   |
| <b>Bidder 2</b> | 3                            | 190                   |
| <b>Bidder 3</b> | 1                            | 90                    |

**Table 1: All Valid Bids in this example**

### Winner Determination

A 3.4 The first step in the Winner Determination process is to calculate the combinations of Bids that satisfy the conditions set out in paragraph 3.126, i.e. the Feasible Combinations of Bids.

A 3.5 All Feasible Combinations of Bids for this example, and their corresponding values, are presented in Table 6. The Feasible Combinations with the highest total value have been highlighted in green.

| <i>Feasible Combination number</i> | <i>Bidder 1's Bid</i> |                       | <i>Bidder 2's Bid</i> |                       | <i>Bidder 3's Bid</i> |                       | <i>Unassigned Lots</i> |                                | <i>Value of Feasible Combination (€)</i> |
|------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|--------------------------------|--|
|                                    | <i>Number of Lots</i> | <i>Bid Amount (€)</i> | <i>Number of Lots</i> | <i>Bid Amount (€)</i> | <i>Number of Lots</i> | <i>Bid Amount (€)</i> | <i>Number of Lots</i>  | <i>Total Reserve Price (€)</i> |  |
| 1                                  | 0                     | 0                     | 0                     | 0                     | 0                     | 0                     | 5                      | 250                            | 250                                      |
| 2                                  | 0                     | 0                     | 0                     | 0                     | 1                     | 90                    | 4                      | 200                            | 290                                      |
| 3                                  | 1                     | 80                    | 0                     | 0                     | 0                     | 0                     | 4                      | 200                            | 280                                      |
| 4                                  | 1                     | 80                    | 0                     | 0                     | 1                     | 90                    | 3                      | 150                            | 320                                      |
| 5                                  | 0                     | 0                     | 2                     | 140                   | 0                     | 0                     | 3                      | 150                            | 290                                      |
| 6                                  | 2                     | 160                   | 0                     | 0                     | 0                     | 0                     | 3                      | 150                            | 310                                      |
| 7                                  | 0                     | 0                     | 2                     | 140                   | 1                     | 90                    | 2                      | 100                            | 330                                      |
| 8                                  | 2                     | 160                   | 0                     | 0                     | 1                     | 90                    | 2                      | 100                            | 350                                      |
| 9                                  | 0                     | 0                     | 3                     | 190                   | 0                     | 0                     | 2                      | 100                            | 290                                      |
| 10                                 | 1                     | 80                    | 2                     | 140                   | 0                     | 0                     | 2                      | 100                            | 320                                      |
| 11                                 | 3                     | 260                   | 0                     | 0                     | 0                     | 0                     | 2                      | 100                            | 360                                      |
| 12                                 | 0                     | 0                     | 3                     | 190                   | 1                     | 90                    | 1                      | 50                             | 330                                      |
| 13                                 | 1                     | 80                    | 2                     | 140                   | 1                     | 90                    | 1                      | 50                             | 360                                      |
| 14                                 | 3                     | 260                   | 0                     | 0                     | 1                     | 90                    | 1                      | 50                             | 400                                      |
| 15                                 | 1                     | 80                    | 3                     | 190                   | 0                     | 0                     | 1                      | 50                             | 320                                      |
| 16                                 | 2                     | 160                   | 2                     | 140                   | 0                     | 0                     | 1                      | 50                             | 350                                      |
| 17                                 | 1                     | 80                    | 3                     | 190                   | 1                     | 90                    | 0                      | 0                              | 360                                      |
| 18                                 | 2                     | 160                   | 2                     | 140                   | 1                     | 90                    | 0                      | 0                              | 390                                      |
| 19                                 | 2                     | 160                   | 3                     | 190                   | 0                     | 0                     | 0                      | 0                              | 350                                      |
| 20                                 | 3                     | 260                   | 2                     | 140                   | 0                     | 0                     | 0                      | 0                              | 400                                      |

**Table 2: All Feasible Combinations of Bids in this example**

A 3.6 There are two Feasible Combinations that give the highest value (number 14 and 20, each with a value of €400). To resolve this tie, we first look to select the one that allocates the greatest number of Lots to Winning Bidders. Feasible Combination 14 assigns 4 Lots (3 to Bidder 1 and 1 to Bidder 3), leaving one Lot unassigned. Feasible Combination 20 assigns all 5 Lots (3 to Bidder 1 and 2 to Bidder 2), with no unassigned Lots. Feasible Combination 20 is therefore

selected as the Winning Allocation. The Winning Bidders are therefore Bidder 1 (with a Winning Bid of €260 for 3 Lots) and Bidder 2 (with a Winning Bid of €140 for 2 Lots).

## Base Price Determination

A 3.7 Following on with the same example as above, we now establish the Base Prices to be paid by Bidder 1 and Bidder 2 for the Lots they have been allocated, following the pricing rules set out above.

A 3.8 The first requirement is that the Base Price for each Winning Bidder must be greater than or equal to the sum of the Reserve Prices of all the Lots included in its corresponding Winning Bid, but less than or equal to the winning Bid Amount.

A 3.9 Recall that Bidder 1's Winning Bid was for three Lots with a Bid Amount of €260 (and a Reserve Price of €150), and that Bidder 2's Winning Bid was for two Lots with a Bid Amount of €140 (and a Reserve Price of €100).

A 3.10 This gives us the following two constraints:

$$150 \leq \text{Base Price for Bidder 1} \leq 260$$

$$100 \leq \text{Base Price for Bidder 2} \leq 140$$

We then apply the second requirement, which states that the set of Base Prices must be sufficiently high such that the sum of prices to be paid by each possible subset of Winning Bidders is at least their joint Opportunity Cost. This means that Bidder 1 must pay at least the Opportunity Cost associated with awarding it three Lots, Bidder 2 must pay the Opportunity Cost associated with awarding it two Lots, and together the two Bidders must pay at least the joint opportunity cost of awarding them the Lots they have won.

A 3.11 Step 1 - The Opportunity Cost of Bidder 1 is calculated as the difference between:

- the value of the hypothetical Winning Allocation in the scenario where all Bids from Bidder 1 are excluded; and
- the value of the original Winning Allocation less the Bid Amount from Bidder 1's Winning Bid.

A 3.12 We first calculate the value of the Winning Allocation that is obtained when the Winner Determination process is run for all Bidders other than Bidder 1. The resulting new Winning Allocation consists of a Bid by Bidder 2 for three Lots with a Bid Amount of €190, a Bid by Bidder 3 for one Lot with a Bid Amount of €90, and one Lot remaining unassigned (with a Reserve Price value of €50). The total value of this alternative Winning Allocation is €190 + €90 + €50 = €330.

The value of the original Winning Allocation less Bidder 1's winning Bid Amount is  $€400 - €260 = €140$ . The Opportunity Cost of Bidder 1 is therefore  $€330 - €140 = €190$ , and the Base Price to be paid by Bidder 1 must be at least this amount.

A 3.13 Similarly, for Bidder 2, the Winning Allocation that is obtained when the Winner Determination process is run for all Bidders other than Bidder 2 consists of a Bid by Bidder 1 for three Lots with a Bid Amount of  $€260$ , a Bid by Bidder 3 for one Lot with a Bid Amount of  $€90$ , and one Lot remaining unassigned (with a value of  $€50$ ). The total value of this Winning Allocation is therefore  $€400$ . The value of the original Winning Assignment less Bidder 2's winning Bid Amount is  $€400 - €140 = €260$ . The Opportunity Cost of Bidder 2 is therefore  $€400 - €260 = €140$ , and the Base Price to be paid by Bidder 2 must be at least this amount.

A 3.14 Step 2 - The joint Opportunity Cost of Bidder 1 and Bidder 2 is defined as the difference between:

- the value of the hypothetical Winning Allocation in the scenario where all Bids from Bidder 1 *and* Bidder 2 are excluded; and
- the value of the original Winning Allocation less the sum of the Winning Bids of Bidder 1 and Bidder 2.

A 3.15 To calculate the joint Opportunity Cost for Bidder 1 and Bidder 2, we first run the Winner Determination for all other Bidders, i.e. Bidder 3 only. In the resulting Winning Allocation Bidder 3 is awarded one Lot (with a corresponding Bid Amount of  $€90$ ), and four Lots remain unassigned with a value of  $€200$ . The value of this Winning Allocation is therefore  $€290$ . The value of the original Winning Assignment excluding the Winning Bids of Bidder 1 and Bidder 2 is  $€400 - €260 - €140 = 0$ . The joint Opportunity Cost for Bidder 1 and Bidder 2 is therefore  $€290 - €0 = €290$ . This means that the sum of the Base Prices to be paid by Bidder 1 and Bidder 2 must be at least  $€290$ .

A 3.16 The Opportunity Cost calculations yield the following constraints that need to be satisfied by the Base Prices:

$$190 \leq \text{Base Price for Bidder 1}$$

$$140 \leq \text{Base Price for Bidder 2}$$

$$290 \leq \text{Base Price for Bidder 1} + \text{Base Price for Bidder 2}$$

A 3.17 We combine the two sets of constraints to give the following:

$$190 \leq \text{Base Price for Bidder 1} \leq 260$$

$$\text{Base Price for Bidder 2} = 140$$

$$290 \leq \text{Base Price for Bidder 1} + \text{Base Price for Bidder 2}$$

A 3.18 Only one Base Price for Bidder 2 satisfies the constraints, and therefore the Base Price for Bidder 2 is €140.

A 3.19 The constraint relating to joint Opportunity Cost is trivially satisfied, as the Base Price for Bidder 2 is equal to €140, and the minimum value that the Base Price for Bidder 1 can take is €190; this implies that the minimum value of the sum of Base Prices for Bidder 1 and Bidder 2 is €330, which exceeds the requisite €290.

A 3.20 However, there is still a range of feasible values for the Base Price of Bidder 1 that satisfy the constraints established so far. We therefore apply the rule that selects the set(s) of Base Prices that minimise the sum of Base Prices across Winning Bidders. Since Bidder 2's Base Price is fixed, this is achieved by simply setting Bidder 1's Base Price to the lowest possible value that still satisfies the Opportunity Cost constraint, which is €190. This gives a final set of Base Prices of €190 for Bidder 1 and €140 for Bidder 2.

# Annex 5 Example of Assignment Stage Winner Determination and Pricing

A 3.21 This section provides a simple example to illustrate the process of determining winning Assignment Bids and Additional Prices.

A 3.22 For simplification, we assume that there are seven Lots available (rather than 19).

A 3.23 In this example, we assume that the Assessment Stage led to two Winning Bidders being awarded frequency-generic Lots; Bidder 1 has won two Lots, and Bidder 2 has won three Lots. This means that two Lots remain unassigned. The number of Lots allocated to each Winning Bidder are provided in Table 7.

| Winning Bidder | Number of Lots allocated |
|----------------|--------------------------|
| Bidder 1       | 2                        |
| Bidder 2       | 3                        |
| Unassigned     | 2                        |

**Table 3: Winning Bids from the Assessment Stage**

A 3.24 We will denote the frequency-ranges of the seven Lots in this example by F1, F2, ..., F7 (see figure below).

|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| F1 | F2 | F3 | F4 | F5 | F6 | F7 |
|----|----|----|----|----|----|----|

## Assignment Options generation

A 3.25 The first step in process of generating the Assignment Options for Bidders is to establish all possible Feasible Frequency Plans. Each of these plans has to conform to the requirements of paragraph 3.142. In particular, a Feasible Frequency Plan is required to be such that each Bidder is assigned a contiguous block of frequency-specific spectrum that does not overlap with the spectrum assigned to other Bidders, and the number of Lots in the frequency assignment of each Bidder is equal to the number of frequency-generic Lots allocated to the Bidder in the Assessment Stage.

A 3.26 The set of Feasible Frequency Plans is determined by considering all possible permutations of the Winning Bidders, as well as “notional” Bidders to represent all the Lots that remained unassigned at the end of the Assessment Stage. As there are two unassigned Lots in this example, we consider all possible permutations of the set {Bidder 1, Bidder 2, Unassigned 1, Unassigned 2}.

A 3.27 Each permutation of this set corresponds to a Feasible Frequency Plan. For example, consider the permutation (Bidder 2, Unassigned 1, Bidder 1, and Unassigned 2). We can construct a Feasible Band Plan by assigning the first three frequency-specific Lots F1-F3 to the first Bidder in the permutation, i.e. Bidder 2 (which won three frequency-generic Lots). Since the next Bidder in the permutation is “Unassigned 1”, we leave the next frequency-specific Lot F4 unassigned. The third Bidder in the permutation is Bidder 1, which won 2 frequency-generic Lots and is thus assigned the Lots F5-F6. Finally, the last frequency-specific Lot, F7, is left unassigned as the last Bidder in the permutation is “Unassigned 2”. This constitutes a single Feasible Frequency Plan.

A 3.28 The list of all Feasible Frequency Plans is shown in Table 8. Note that the total number of permutations of the set {Bidder 1, Bidder 2, Unassigned 1, Unassigned 2} is 24. However, as the unassigned Lots are in practice identical, there are only twelve unique Feasible Frequency Plans generated<sup>39</sup>.

| Permutation                                      | Feasible Frequency Plan  | Assignment Option for Bidder 1 | Assignment Option for Bidder 2 |    |    |    |    |    |       |       |
|--|--|--------------------------------|--------------------------------|----|----|----|----|----|-------|-------|
| (Bidder 1, Bidder 2, Unassigned 1, Unassigned 2) | <table border="1"><tr><td>B1</td><td>B1</td><td>B2</td><td>B2</td><td>B2</td><td>U</td><td>U</td></tr></table> | B1                             | B1                             | B2 | B2 | B2 | U  | U  | F1-F2 | F3-F5 |
| B1   | B1   | B2                             | B2                             | B2 | U  | U  |    |    |       |       |
| (Bidder 1, Unassigned 1, Bidder 2, Unassigned 2) | <table border="1"><tr><td>B1</td><td>B1</td><td>U</td><td>B2</td><td>B2</td><td>B2</td><td>U</td></tr></table> | B1                             | B1                             | U  | B2 | B2 | B2 | U  | F1-F2 | F4-F6 |
| B1   | B1   | U                              | B2                             | B2 | B2 | U  |    |    |       |       |
| (Bidder 1, Unassigned 1, Unassigned 2, Bidder 2) | <table border="1"><tr><td>B1</td><td>B1</td><td>U</td><td>U</td><td>B2</td><td>B2</td><td>B2</td></tr></table> | B1                             | B1                             | U  | U  | B2 | B2 | B2 | F1-F2 | F5-F7 |
| B1   | B1   | U                              | U                              | B2 | B2 | B2 |    |    |       |       |
| (Unassigned 1, Bidder 1, Bidder 2, Unassigned 2) | <table border="1"><tr><td>U</td><td>B1</td><td>B1</td><td>B2</td><td>B2</td><td>B2</td><td>U</td></tr></table> | U                              | B1                             | B1 | B2 | B2 | B2 | U  | F2-F3 | F4-F6 |
| U  | B1   | B1                             | B2                             | B2 | B2 | U  |    |    |       |       |
| (Unassigned 1, Bidder 1, Unassigned 2, Bidder 2) | <table border="1"><tr><td>U</td><td>B1</td><td>B1</td><td>U</td><td>B2</td><td>B2</td><td>B2</td></tr></table> | U                              | B1                             | B1 | U  | B2 | B2 | B2 | F2-F3 | F5-F7 |
| U  | B1   | B1                             | U                              | B2 | B2 | B2 |    |    |       |       |
| (Unassigned 1, Unassigned 2, Bidder 1, Bidder 2) | <table border="1"><tr><td>U</td><td>U</td><td>B1</td><td>B1</td><td>B2</td><td>B2</td><td>B2</td></tr></table> | U                              | U                              | B1 | B1 | B2 | B2 | B2 | F3-F4 | F5-F7 |
| U  | U  | B1                             | B1                             | B2 | B2 | B2 |    |    |       |       |
| (Bidder 2, Bidder 1, Unassigned 1, Unassigned 2) | <table border="1"><tr><td>B2</td><td>B2</td><td>B2</td><td>B1</td><td>B1</td><td>U</td><td>U</td></tr></table> | B2                             | B2                             | B2 | B1 | B1 | U  | U  | F4-F5 | F1-F3 |
| B2   | B2   | B2                             | B1                             | B1 | U  | U  |    |    |       |       |
| (Bidder 2, Unassigned 1, Bidder 1, Unassigned 2) | <table border="1"><tr><td>B2</td><td>B2</td><td>B2</td><td>U</td><td>B1</td><td>B1</td><td>U</td></tr></table> | B2                             | B2                             | B2 | U  | B1 | B1 | U  | F5-F6 | F1-F3 |
| B2   | B2   | B2                             | U                              | B1 | B1 | U  |    |    |       |       |

<sup>39</sup> For example, in the permutation (Bidder 1, Bidder 2, Unassigned 1, Unassigned 2) yields the same frequency plan as (Bidder 1, Bidder 2, Unassigned 2, Unassigned 1), so only one Feasible Frequency Plan is generated from these two permutations.

| Permutation                                      | Feasible Frequency Plan  | Assignment Option for Bidder 1 | Assignment Option for Bidder 2 |    |    |    |    |    |       |       |
|--|--|--------------------------------|--------------------------------|----|----|----|----|----|-------|-------|
| (Bidder 2, Unassigned 1, Unassigned 2, Bidder 1) | <table border="1"><tr><td>B2</td><td>B2</td><td>B2</td><td>U</td><td>U</td><td>B1</td><td>B1</td></tr></table> | B2                             | B2                             | B2 | U  | U  | B1 | B1 | F6-F7 | F1-F3 |
| B2   | B2   | B2                             | U                              | U  | B1 | B1 |    |    |       |       |
| (Unassigned 1, Bidder 2, Bidder 1, Unassigned 2) | <table border="1"><tr><td>U</td><td>B2</td><td>B2</td><td>B2</td><td>B1</td><td>B1</td><td>U</td></tr></table> | U                              | B2                             | B2 | B2 | B1 | B1 | U  | F5-F6 | F2-F4 |
| U  | B2   | B2                             | B2                             | B1 | B1 | U  |    |    |       |       |
| (Unassigned 1, Bidder 2, Unassigned 2, Bidder 1) | <table border="1"><tr><td>U</td><td>B2</td><td>B2</td><td>B2</td><td>U</td><td>B1</td><td>B1</td></tr></table> | U                              | B2                             | B2 | B2 | U  | B1 | B1 | F6-F7 | F2-F4 |
| U  | B2   | B2                             | B2                             | U  | B1 | B1 |    |    |       |       |
| (Unassigned 1, Unassigned 2, Bidder 2, Bidder 1) | <table border="1"><tr><td>U</td><td>U</td><td>B2</td><td>B2</td><td>B2</td><td>B1</td><td>B1</td></tr></table> | U                              | U                              | B2 | B2 | B2 | B1 | B1 | F6-F7 | F3-F5 |
| U  | U  | B2                             | B2                             | B2 | B1 | B1 |    |    |       |       |

**Table 4: List of all possible Feasible Frequency Plans**

A 3.29 Based on the set of Feasible Frequency Plans, Bidder 1 could be allocated Lots F1-F2, F2-F3, F3-F4, F4-F5, F5-F6 or F6-F7. These are the Assignment Options for Bidder 1.

A 3.30 Similarly, the Assignment Options for Bidder 2 are F1-F3, F2-F4, F3-F5, F4-F6, and F5-F7.

### Determination of the Winning Assignment

A 3.31 Once the Assignment Options have been generated, Bidder 1 and Bidder 2 can submit Assignment Bids for their respective Assignment Options.

A 3.32 Let us suppose Bidder 1’s most preferred Assignment Option is for the lowest frequency block comprising Lots F1-F2. Its second choice would be F5-F6 or F6-F7 (and it is indifferent between these two). Bidder 1’s least preferred assignments are F2-F3, F3-F4 and F4-F5, and it is indifferent between these. To express its preferences, Bidder 1 Bids €100 for F1-F2, €50 each for F5-F6 and F6-F7, and €0 for each of the other Assignment Options. Note that Bidder 1 does not need to submit a non-zero Bid for its least preferred Assignment Option(s), as it is guaranteed to be assigned frequencies corresponding to exactly one of its Assignment Options regardless of the Assignment Bids submitted by it or other Bidders.

A 3.33 Bidder 2 would also prefer to be assigned frequencies at the bottom of the band (i.e. F1-F3). If it is not assigned its preferred frequency block corresponding to F1-F3, it is indifferent between the other Assignment Options available to it. To express its preferences, Bidder 2 submits an Assignment Bid of €200 for F1-F3, and €0 for each of its other Assignment Options.

A 3.34 The Assignment Bids submitted by both Bidders are shown in Table 9.

| Bidder 1          |                    | Bidder 2          |                    |
|-------------------|--------------------|-------------------|--------------------|
| Assignment Option | Assignment Bid (€) | Assignment Option | Assignment Bid (€) |
| F1-F2             | 100                | F1-F3             | 200                |
| F2-F3             | 0                  | F2-F4             | 0                  |
| F3-F4             | 0                  | F3-F5             | 0                  |
| F4-F5             | 0                  | F4-F6             | 0                  |
| F5-F6             | 50                 | F5-F7             | 0                  |
| F6-F7             | 50                 | –                 | –                  |

**Table 5: All Assignment Bids**

A 3.35 The value of each Feasible Frequency Plan (shown in Table 10) is calculated as the sum of the Assignment Bids on the constituent Assignment Options, with unassigned frequency-specific Lots contributing zero to the sum.

| Feasible Frequency Plan                          | Value (€) |
|--|-----------|
| (Bidder 1, Bidder 2, Unassigned 1, Unassigned 2) | 100       |
| (Bidder 1, Unassigned 1, Bidder 2, Unassigned 2) | 100       |
| (Bidder 1, Unassigned 1, Unassigned 2, Bidder 2) | 100       |
| (Unassigned 1, Bidder 1, Bidder 2, Unassigned 2) | 0         |
| (Unassigned 1, Bidder 1, Unassigned 2, Bidder 2) | 0         |
| (Unassigned 1, Unassigned 2, Bidder 1, Bidder 2) | 0         |
| (Bidder 2, Bidder 1, Unassigned 1, Unassigned 2) | 200       |
| (Bidder 2, Unassigned 1, Bidder 1, Unassigned 2) | 250       |
| (Bidder 2, Unassigned 1, Unassigned 2, Bidder 1) | 250       |
| (Unassigned 1, Bidder 2, Bidder 1, Unassigned 2) | 50        |
| (Unassigned 1, Bidder 2, Unassigned 2, Bidder 1) | 50        |
| (Unassigned 1, Unassigned 2, Bidder 2, Bidder 1) | 50        |

**Table 6: Value of Frequency Band Plans**

A 3.36 There are two combinations of Assignment Bids that yield the maximum total value. We therefore need to look at how the unassigned spectrum is positioned under each of the two options. The first in the list splits the unassigned spectrum into two distinct frequency blocks, while the second has

the unassigned spectrum positioned between the two Bidders in a single contiguous block. To minimise the fragmentation of unassigned spectrum, we therefore select the combination that has Bidder 2 at the bottom of the band and Bidder 1 at the top. Bidder 1 is assigned the frequency-specific Lots F6-F7 (for which it submitted an Assignment Bid of €50), and Bidder 2 is assigned the Lots F1-F3 (for which it submitted an Assignment Bid of €200). Lots F4 and F5 remain unassigned.

## Additional Price Determination

A 3.37 Following on with the same example as above, we now establish the Additional Prices to be paid by Bidder 1 and Bidder 2 for the frequencies they have been allocated, using the pricing rules set out in Section 3.7.5.

A 3.38 The first requirement is that the Additional Price for each Winning Bidder must be greater than or equal to zero, but less than or equal to the winning Bid Amount.

A 3.39 Recall that the Assignment Bid Amounts submitted by Bidder 1 and Bidder 2 for the Assignment Options they have won are €50 and €200, respectively. This gives us the following two constraints:

$$0 \leq \text{Additional Price for Bidder 1} \leq 50$$

$$0 \leq \text{Additional Price for Bidder 2} \leq 200$$

A 3.40 We then apply the second requirement, which states that the set of Additional Prices must be sufficiently high such that the sum of prices to be paid by each possible subset of Winning Bidders is at least their joint Opportunity Cost. This means that Bidder 1 must pay at least the Opportunity Cost associated with assigning it the F6-F7, and Bidder 2 must pay the Opportunity Cost associated with assigning it the F1-F3. Together the two Bidders must pay at least the joint Opportunity Cost of assigning to them their respective frequencies.

A 3.41 Recall that the Opportunity Cost of a Winning Bidder or group of Winning Bidder is defined as the difference between:

- the total amount of all winning Assignment Bids in a hypothetical scenario in which all the Assignment Bids of the Winning Bidder(s) in question were set to zero; and
- the total amount of the original winning Assignment Bid(s) less the total amount of the winning Assignment Bid(s) from the Winning Bidder(s) in question.

A 3.42 To determine the opportunity cost for Bidder 1, we first calculate the value of the set of winning Assignment Bids that is obtained when we set the all of the Assignment Bids submitted by Bidder 1 to zero. The resulting new set of winning Assignment Bids assigns F1-F3 to Bidder 2 (for which it submitted an Assignment Bid of €200), and the remaining frequencies assigned using one of the configurations that positions the two unallocated Lots in a single contiguous block. As Bidder 2 is the only Bidder that (in this alternative scenario) submitted an Assignment Bid greater than zero, the total value of this alternative combination of winning Assignment Bids is €200. The total value of the original winning Assignment Bids less Bidder 1's winning Assignment Bid Amount is €250 – €50 = €200. The Opportunity Cost of Bidder 1 is therefore €200 – €200 = €0, and the Additional Price to be paid by Bidder 1 must be at least this amount.

A 3.43 We run the same process to calculate the Opportunity Cost of Bidder 2. The outcome in a scenario where Bidder 2's Assignment Bids are set to zero assigns F1-F2 to Bidder 1 (for which it submitted an Assignment Bid Amount of €100), with Bidder 2's assignment selected such that the unallocated spectrum is in a single contiguous block. As Bidder 1 is the only Bidder that is submitted a non-zero Assignment Bid, the total value of the winning Assignment Bids in the alternative scenario is €100. The total value of the original winning Assignment Bids less Bidder 2's winning Bid Amount is €250 – €200 = €50. The Opportunity Cost of Bidder 2 is therefore €100 – €50 = €50, and the Additional Price to be paid by Bidder 2 must be at least this amount.

A 3.44 It is trivial to calculate the joint opportunity cost for Bidder and Bidder 2 since there are no non-zero Assignment Bids in the scenario where both Bidders' Assignment Bids are set to zero (hence the value of the alternative outcome is €0), and since there were no other Winning Bidders, the remaining value of the original set of winning Assignment Bids after subtracting the winning Assignment Bid Amounts of the two Bidders is also €0. The joint opportunity cost for Bidder 1 and Bidder 2 is therefore €0 - €0 = €0. This means that the sum of the Additional Prices to be paid by Bidder 1 and Bidder 2 must be greater or equal to 0.

A 3.45 The Opportunity Cost calculations yield the following constraints that need to be satisfied by the Additional Prices:

$$0 \leq \text{Additional Price for Bidder 1}$$

$$50 \leq \text{Additional Price for Bidder 2}$$

$$0 \leq \text{Base Price for Bidder 1} + \text{Base Price for Bidder 2}$$

A 3.46 Combining the two sets of constraints gives the following:

$$0 \leq \text{Additional Price for Bidder 1} \leq 50$$

$$50 \leq \text{Additional Price for Bidder 2} \leq 200$$

$$0 \leq \text{Additional Price for Bidder 1} + \text{Additional Price for Bidder 2}$$

A 3.47 There is a range of feasible values for the Additional Prices for both Bidder 1 and Bidder 2 that satisfy the constraints established so far. We therefore apply the third requirement for establishing Additional Prices that selects the set(s) of Additional Prices that minimises the sum of Additional Prices across Winning Bidders. In this example, this is achieved by simply setting the Additional Prices for Bidder 1 and Bidder 2 to the lowest value allowed by the constraints above, i.e. the Additional Price for Bidder 1 is €0 and the Additional Price for Bidder 2 is €50 (with a total value of €50, which meets the requirement for joint opportunity cost). These are the final set of Additional Prices.

# Annex 6 Relationships, resolution of Bidder connections, exemptions and changes

## Ownerships rules – relationship examples

A 3.48 This paragraph is intended to illustrate the types of relations that ComReg considers to fall within the concepts of Connected Persons and Associated Bidders, as discussed in Section 3.3.4. The following is not meant to be an exhaustive or comprehensive description of the relationships that may fall within each category.

- (a) A “**Bidding Group**” includes a Bidder and its Connected Persons.
- (b) A person is considered to be a “**Connected Person**” in relation to a Bidder where the Connected Person and/or any of its Controlling Persons and/or any of its Controlled Persons:
  - (i) either by itself or in concert with another person or other persons Controls the Bidder;
  - (i) either by itself or in concert with another person or other persons has a direct or indirect Interest of 10% or more in the Bidder;
  - (ii) is a partner of the Bidder;
  - (iii) either by itself or in concert with another person or other persons has an agreement, wholly or partly, to finance or otherwise assist the Bidder in connection with the Award Process;
  - (iv) is Controlled by the Bidder alone or in concert with another Connected Person or Persons; or
  - (v) has as a director or senior executive any individual who is a director or senior executive of the Bidder or any of its Controlled Persons.
- (c) A person (the “**Controlling Person**”) is considered to control another person (the “**Controlled Person**”) for example:
  - (i) where the Controlling Person and/or its Controlled Persons and/or its Associates, either by itself or in concert with other persons has:
    - (A) an Interest in 30% or more of the share capital of the Controlled Person;

- (B) the right to cast 30% or more of the votes of shareholders on any matter at shareholders meetings;
- (ii) where the Controlled Person routinely or generally acts in accordance with the instructions of the Controlling Person;
- (iii) where, in the plain meaning of the words, the Controlling Person and/or its Controlled Persons controls the Controlled Person;
- (iv) where the Controlling Person is capable of exercising decisive influence on the activity of the Controlled Person by means of:
  - (A) securities, contracts or any other means, or any combination of securities, contracts or other means; and/or
  - (B) ownership of, or the right to use all or part of, the assets of the “Controlled Person”, and/or
  - (C) rights or contracts which enable decisive influence to be exercised with regard to the composition, voting or decisions of the organs of the “Controlled Person”; and/or
  - (D) without limitation by the foregoing, any other way,

and “**Control**” will be construed accordingly.

In addition to the above, in determining whether influence of the kind referred to above is capable of being exercised by a “Controlling Person” over a “Controlled Person”, regard shall be had to all the circumstances of the matter and not solely to the legal effect of any instrument.

- (d) A person is considered to be “**in concert**” with another person in circumstances where, for example:
  - (i) one person Controls the other person;
  - (ii) one person is Associated with the other person;
  - (iii) there is an agreement or arrangement (whether or not legally binding) between those persons as to co-ordinated or concerted behaviour or activity by those persons (or either of them); or
  - (iv) where, within the plain meaning of the expression “concerted”, the persons’ behaviour or activity is concerted.
- (e) An “**interest**” is considered to include:
  - (i) an ownership interest, legal or beneficial, actual or contingent;
  - (ii) an interest as the holder of a mortgage, charge, lien, hypothecation or other encumbrance;

- (iii) any derivative interest such as a participation or sub-participation where the holder of the Interest and/or any of its Controlled Persons directly or indirectly bears some or all of the rewards and / or some or all of the risks of the relevant entity, shares or other securities;
  - (iv) an option to acquire any of the foregoing; or
  - (v) a right to convert a right or asset (such as a debt security) into any of the foregoing.
- (f) An “**Associate**” of any entity is considered to include:
- (i) a director or company secretary or like officer of the entity and/or of its Controlled Persons;
  - (ii) a senior executive of the entity and/or of its Controlled Persons;
  - (iii) a spouse, civil partner or cohabiting partner of the foregoing;
  - (iv) any minor child of the foregoing and any child of the foregoing residing with the foregoing;
  - (v) any partner of the foregoing; or
  - (vi) any entity Controlled by any one or more of the foregoing and any partner of such entity.
- (g) “**Associated Bidders**” is considered to include Bidders who have one of the following relationships to each other:
- (i) a Connected Person in relation to one Bidder holds a direct or indirect Interest of 20% or more in the other Bidder, or
  - (ii) a Person who is not a Connected Person in relation to any of the Bidders concerned holds a direct or indirect Interest of 20% or more in both Bidders.

### **Resolution of Bidder connections**

A 3.49 It is possible at the Application Date that a Bidder is unaware that another party with whom it has common or overlapping Bidding Groups or with which it is an Associated Bidder is applying. If ComReg considers that one of the relations referred to above exists between Bidders, it shall notify this to the Bidders affected, indicating a deadline for Bidders to:

- (a) apply for exemption from the rules on relations between Bidders (see below);
- (b) bring the relation to an end; or
- (c) refrain from further participation in the Award Process.

- A 3.50 If the Bidders affected are not granted an exemption, do not bring the relation to an end or refrain from participation in the Award Process, ComReg will exclude the Bidders affected from further participation in the Award Process. If the relation comes to light later in the Award Process, i.e. after the Auction has commenced, then ComReg may exclude the Bidder from further participation in the Award Process (see section 3.8 of the Information Memorandum above in that regard) and this may result in partial or whole Deposit forfeiture for the affected Bidders. ComReg may also declare the result of the Award Process not binding, wholly or partly, on it.
- A 3.51 If one of the above-mentioned relations exists between two or more Bidders, and it is not possible to bring the relation to an end within the deadline set by ComReg, and ComReg does not grant an exemption, one or more of the Bidders may withdraw from participation in the Award Process, before the deadline for doing so set by ComReg, so that it is not necessary for ComReg to exclude both Bidders. However, the composition of the remaining Bidder and the content of its Application must remain unchanged, subject to ComReg's discretion to approve appropriate amendments.

### **Exemption from ownership rules**

- A 3.52 ComReg may, in exceptional circumstances and at its sole discretion, grant exemption from the ownership rules described in Section 3.4.4 of the Information Memorandum. Furthermore, ComReg may attach terms to a decision granting exemption from the ownership rules.
- A 3.53 In considering whether to grant an exemption and any terms to attach to an exemption, ComReg will be guided by the need to ensure the efficient use of spectrum, compliance with Section 4 of the Competition Act 2002 (as amended) and compliance with its statutory functions, objectives and duties generally.
- A 3.54 If one of the relations described in Section 3.4.4 of the Information Memorandum exists between two or more Bidders, ComReg may grant exemption from the ownership rules if it is established by the affected Bidders, without undue delay and to ComReg's satisfaction, that there will be no breach of the rules on confidentiality and Bidder behaviour and the relation will not otherwise have a negative impact on the Award Process. For the avoidance of doubt, ComReg will exercise its discretion whether or not to grant an exemption acting reasonably and in accordance with its statutory functions, objectives and duties.

### **Changes to ownership structures**

- A 3.55 After the Application Date, a Bidder and its Connected Persons must refrain from actions or omissions that establish a relation to another Bidder resulting in the Bidders falling outside permitted ownership structures. In the absence of an

exemption, failure to comply with this rule may result in partial or whole Deposit forfeiture and/or exclusion from the Award Process.

A 3.56 In any event, the Bidder must notify ComReg of any changes that impact on its ownership structures on which its Application is based after the date the Application is submitted.

### **Bidders subject to Restructuring**

A 3.57 ComReg may, but does not guarantee to, permit an Applicant in a restructuring process to participate in the Award Process subject to additional conditions to be set by ComReg on a case by case basis on receipt of the relevant disclosures.

# Annex 7: Determination of Winning Bids and Base Prices in the Assessment Stage

## Winner Determination

This section provides a formal description of the procedure for determining Winning Bidders, Winning Bids and Base Prices in the Assessment Stage.

## Packages, Bidders, and Bids

Let  $J$  be the set of all Bidders. The total number of all Bidders is therefore  $|J|$ . We will use  $J' \subseteq J$  to denote subsets of the set of all Bidders at certain points below.

Let  $B^j$  denote the set of all Bids made by Bidder  $j \in J$  for a non-zero number of Lots, and let  $K^j = |B^j|$  be the number of such Bids. Let  $\beta^{j,k} = (b^{j,k}, q^{j,k})$  denote bid  $k \in \{1, \dots, K^j\}$  from Bidder  $j$ , in which Bidder  $j$  offers to pay up to  $b^{j,k}$  for a non-zero number of Lots  $q^{j,k}$ .

A Combination of Bids (across all the Bids made by the Bidders) is represented by the vector  $x$  of length equal to the number of all valid Bids submitted by all Bidders, i.e.

$$x = (x^{1,1}, x^{1,2}, \dots, x^{1,K^1}, x^{2,1}, \dots, x^{|J|, K^{|J|}}),$$

where  $x^{j,k}$  is a binary variable that is equal to 1 if the Bid  $\beta^{j,k}$  of Bidder  $j$  is included in the combination and zero otherwise.

## Feasible Combination of Bids

A Combination of Bids  $x$  is a Feasible Combination of Bids if and only if it satisfies the following two conditions:

$$\sum_{j \in J} \sum_{k \in B^j} x^{j,k} q^{j,k} \leq 19,$$

$$\sum_{k=1}^{K^j} x^{j,k} \leq 1 \quad \forall j \in J.$$

These conditions require that, in order for  $x$  to be a Feasible Combination of Bids:

- the number of Lots to be allocated across all Bidders under  $x$  is no more than the number of Lots available in the Award Spectrum, i.e. 19; and

- each Bidder wins at most one of its Bids, i.e. at most one Bid from the each Bidder is selected in  $x$ .

We will denote the set of all Feasible Combination of Bids by  $F$ .

## Value of a Feasible Combination of Bids

Let  $r$  denote the reserve price per Lot. A Feasible Combination of Bids  $x \in F$  has a value  $v(x)$  calculated as the sum of the included Bid Amounts plus the reserve price of any unassigned Lots:

$$v(x) = \sum_{j \in J} \sum_{k \in B^j} (x^{j,k} b^{j,k}) + r \cdot \left( 19 - \sum_{j \in J} \sum_{k \in B^j} x^{j,k} q^{j,k} \right).$$

## Winning Allocation

The Winning Allocation (i.e. the winning Feasible Combination of Bids) must belong to the set  $F^*$  of Feasible Combination of Bids of maximum value, i.e.

$$F^* = \arg \max_{x \in F} v(x).$$

If the set  $F^*$  consists of only one Feasible Combination of Bids, this becomes the Winning Allocation. If not, the first tie-breaking rule requires that the Winning Allocation maximises the number of assigned lots, i.e. the Winning Allocation must belong to the set

$$F^{**} = \arg \max_{x \in F^*} \sum_{j \in J} \sum_{k \in B^j} x^{j,k} q^{j,k}.$$

If there are multiple Feasible Combination of Bids in the set  $F^{**}$ , one of these will be selected at random as the Winning Allocation.

Let

$$\omega = \left( \omega^{1,1}, \omega^{1,2}, \dots, \omega^{1,K^1}, \omega^{2,1}, \dots, \omega^{|J|,K^{|J|}} \right),$$

denote the Winning Allocation. Let  $W$  be the set of Winning Bidders. Note that if Bidder  $j$  is amongst the Winning Bidders, i.e.  $j \in W$ , it is necessarily true that  $\omega^{j,k} = 1$  for some  $k$ . Otherwise, if Bidder  $j$  is not a Winning Bidder, i.e.  $j \notin W$ , we have  $\omega^{j,k} = 0$  for all  $k$ .

## Opportunity Cost

The Opportunity Cost of a group of Bidders  $J' \subseteq J$ , denoted by  $C(J')$ , is calculated as follows.

Let  $F^{J'}$  denote the set of all Feasible Combination of Bids that do not include any Bid from the set of Bidders  $J'$ , i.e.

$$F^{J'} = \{x \in F \mid x^{j,k} = 0 \quad \forall k \in B^j, \forall j \in J'\}.$$

Let  $V(J')$  denote the maximum value that is achieved across all the Feasible Combinations of Bids in  $F^{J'}$ , i.e.

$$V(J') = \max_{x \in F^{J'}} v(x).$$

The Opportunity Cost of the set of Bidders  $J'$  is then defined as

$$C(J') = V(J') - \left( v(\omega) - \sum_{j \in J'} \sum_{k \in B^j} \omega^{j,k} b^{j,k} \right).$$

## Determination of Base Prices

We denote the Base Prices as a price vector  $p^* = (p^1, \dots, p^{|J|})$ , where  $p^j$  is the Base Price for Bidder  $j$ .

Base Prices must satisfy the (first) requirement that:

$$r \cdot \left( \sum_{k \in B^j} \omega^{j,k} q^{j,k} \right) \leq p^j \leq \sum_{k \in B^j} \omega^{j,k} b^{j,k} \quad \forall j \in J.$$

As the Opportunity Cost for Bidders who have not been assigned any Lots is zero, this requires that the Base Price for Bidders who have not been assigned any Lots is also zero.

Base Prices must satisfy the (second) requirement that:

$$C(W') \leq \sum_{j \in W'} p^j \quad \forall W' \subseteq W.$$

Let  $P$  denote the set of price vectors that satisfy the previous two conditions. Let  $P^*$  denote the set of price vectors that satisfy the previous two conditions and which minimise the sum of prices across all price vectors in  $P$ , so

$$P^* = \arg \min_{p \in P} \sum_{j \in W} p^j.$$

The Base Prices must satisfy the (third) requirement that they must belong to the set  $P^*$ .

The Base Price must satisfy the (fourth) requirement that:

$$p^* = \arg \min_{p \in P^*} \sum_{j \in W} (p^j - C(\{j\}))^2.$$

As this is a strictly convex quadratic optimisation subject to linear constraints, it has a unique solution.

