

1800 MHz Auction

**Award of frequencies in the frequency bands
1720.1-1785.0 MHz and 1815.1-1880.0 MHz**

Information Memorandum

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Contents

1	Introduction and summary	1
1.1	Purpose of the 1800 MHz Auction	1
1.2	Spectrum to be awarded	2
1.3	Spectrum Cap	2
1.4	Coverage obligation	2
1.5	Overview of the process for assigning spectrum and the coverage obligation	3
1.6	The Auction process	4
1.7	Structure of the Memorandum	5
2	Lots and exemption lots available in the Auction	6
2.1	Spectrum lots	6
2.2	Exemptions from the coverage obligation	6
2.3	Overview of available lots and exemptions from the coverage obligation	7
2.4	Reserve prices	8
3	Licence terms and conditions	9
3.1	The 1800 MHz frequency band	9
3.2	Coverage obligation and exemptions	10
3.3	Usage requirements	13
3.4	Usage restrictions	13
3.4.1	Out-of-band emissions	14
3.4.2	Restrictions due to international coordination	14
3.5	Duration of Licences	14
3.6	Geographical extent of Licences	14
3.7	Revocation of Licences and modification of Licence terms	15
3.7.1	Revocation of Licence	15
3.7.2	Modification of Licence	16
3.7.3	Relaxation of the coverage obligation as a result of new auctions	17
3.8	Annual frequency charges	17
4	Regulation	19
4.1	Regulatory framework	19
4.1.1	Frequency Act	19
4.1.2	Regulation of the Danish telecommunications market	19
4.1.3	Telecommunications providers' assistance to the police	20
4.1.4	Network and information security	20
4.1.5	Competition Act	21
4.1.6	EU regulation	21
4.1.7	Health and safety issues	22
4.2	Site sharing and network sharing	23
4.2.1	Site sharing	23
4.2.2	Network sharing	25

4.3	Licence trading	25
4.4	Treatment of Licence Price for VAT purposes	25
5	Overview of the auction process	26
5.1	Stages of the auction process	26
5.1.1	The Application Stage	26
5.1.2	The Qualification Stage	26
5.1.3	The Auction	26
5.1.4	Grant Stage	28
5.2	Time schedule	28
5.3	Ownership rules	30
5.3.1	Definition of Connected Persons and Associated Bidders	31
5.3.2	Restrictions on relations between Bidders	32
5.3.3	Resolution of Bidder connections	32
5.3.4	Exemption from ownership rules	32
5.3.5	Changes to ownership structures	33
5.3.6	Mobile Operators	34
5.4	Rules on Bidder behaviour	34
5.4.1	Definition of Confidential Information and Insiders	35
5.4.2	Collusion and other disruption to the Auction	35
5.4.3	Restrictive agreements	36
5.4.4	Directors and employees, identifying obligations	36
5.4.5	Penalties	37
6	Application procedure	39
6.1	Application Stage	39
6.1.1	Bidders	39
6.1.2	Submission of Applications	39
6.1.3	Application content	40
6.1.4	Opening and initial review of Applications	42
6.1.5	Publication of list of Bidders	43
6.1.6	Notification and resolution of common ownership	43
6.1.7	Amendments and correction of Applications	44
6.2	Qualification Stage	44
6.2.1	Last Day For Withdrawal	44
6.2.2	Announcement of Qualified Bidders	45
6.2.3	Notification of bids in the first auction stage	45
6.2.4	Notification of bids in the third auction stage	45
6.2.5	Procedure if there is only one Bidder	45
6.3	Deposit	46
6.3.1	Deposit, general	46
6.3.2	Release of Deposit	46
6.4	The Electronic Auction System (EAS)	46
7	The Auction	48
7.1	First auction stage	48

7.2	Second auction stage	49
7.3	The third auction stage	51
7.3.1	Overview	51
7.3.2	Lots available	51
7.3.3	Bids	51
7.3.4	Round prices	53
7.3.5	Scheduling of rounds	53
7.3.6	Submission of bids	54
7.3.7	Extension rights	56
7.3.8	Activity Rules	57
7.3.9	Evaluation of bids and closing of the third auction stage	63
7.4	The fourth auction stage	74
7.4.1	Spectrum assignment	75
7.4.2	Frequency options	75
7.4.3	Scheduling the fourth auction stage	77
7.4.4	Submitting fourth auction stage bids	78
7.4.5	Evaluation of bids	78
7.4.6	End of the fourth auction stage	80
7.5	Exceptional circumstances during the Auction	80
8	Granting of Licences	82
8.1	Payment of Licence Price	82
8.1.1	Payment schedule	82
8.1.2	Demand guarantee for the Deferred Payment	83
8.2	Costs of arranging and implementing the Auction	83
8.3	Default and return of the Licence	84
8.4	Issue of Licences	84
8.5	Announcement of results	84
9	Communication	86
9.1	Publication of information	86
9.2	Process for enquires before the start of the auction process	86
9.3	Communication during the auction process	87
9.4	Communication during exceptional circumstances	87
Bilag A:	Definitions and Glossary of Terms	
Bilag B:	Decision by the Minister for Energy, Utilities and Climate of 28 June 16 on the 1800 MHz auction	
Bilag C:	Decision by the Danish Energy Agency of 28 June 2016 on the 1800 MHz auction	
Bilag D:	Draft Licences	
Bilag E:	Application Form	
Bilag F:	Template for Payment Guarantee	
Bilag G:	Bidder Declaration	
Bilag H:	Disclosure of Ownership Structure	
Bilag I:	Coordination Agreement between Denmark and Sweden concerning the 1800 MHz frequency band	

- Bilag J: Coordination Agreement between Denmark and Germany concerning
the 1800 MHz frequency band
- Bilag K: Overview of Coverage Area Groups (Address List)

IMPORTANT NOTICE

This Information Memorandum (The "Memorandum") has been prepared by the Danish Energy Agency in cooperation with DotEcon Ltd and Analysys Mason (the "Advisers") in connection with the award of frequencies in the frequency bands 1720.1-1785.0 MHz and 1815.1-1880.0 MHz (the 1800 MHz frequency band) due to take place in September 2016.

The Memorandum is for information purposes only. It is provided on the understanding that it will be used by the Recipient for the sole purpose of assisting the Recipient in considering possible participation in the Auction. The Memorandum is not intended to form any part of the basis of any investment decision or evaluation or any other decision to participate in the Auction, The Memorandum should not be considered as a recommendation by the Danish Energy Agency and its Advisers or the Danish Energy Agency's other advisers to any Recipient of this Notice to participate in any future auction.

The Minister for Energy, Utilities and Climate's Decision provides the framework for the auction of the offered frequencies in the 1800 MHz frequency band, see Annex B, and the Danish Energy Agency's Decision includes rules concerning the preparation and implementation of the Auction, see Annex C. Furthermore, Recipients should consult relevant legislation, including Act No. 475 of 12 June 2009 on Radio Frequencies as subsequently amended (the Frequency Act), see:

<https://www.retsinformation.dk/forms/r0710.aspx?id=124962>

All information contained in this Memorandum is subject to updating, modification and amendment without notice. It is the responsibility of the Recipient to keep itself aware of such updating, modification and amendment.

The authoritative version of this Information Memorandum is in Danish. An English version is provided only for convenience when the final auction documents are published and is not intended to be the authoritative version. The glossary (Annex A) provides the definition of key terms in this Memorandum.

1 Introduction and summary

On 17 March 2015, the then Minister for Business and Growth decided that an auction should be held in 2016 of the frequencies that will become available in June 2017 in the 1800 MHz frequency band.

The 1800 MHz Auction is expected to commence in September 2016. The frequencies will be awarded nationwide on a service- and technology-neutral basis.

After the general election in Denmark on 18 June 2015, parts of the telecommunications area were placed under the Danish Ministry of Energy, Utilities and Climate. This means that the Danish Ministry of Energy, Utilities and Climate, hereunder the Danish Energy Agency, is responsible for preparing and carrying out the 1800 MHz auction.

The Danish Energy Agency's framework for implementing the award and issuing the Licences is given in the Danish Minister for Energy, Utilities and Climate's Decision of 28 June 2016 regarding the 1800 MHz Auction (hereinafter "the Minister's Decision"), cf. Annex B.

More detailed rules for the implementation of the 1800 MHz Auction are given in the Danish Energy Agency's Decision of 28 June 2016 (hereinafter "the Danish Energy Agency's Decision"), cf. Annex C.

This Memorandum describes the frequencies to be auctioned, the regulatory framework and the auction process.

1.1 Purpose of the 1800 MHz Auction

The Auction will be held under the provisions of Act No. 475 of 12 June 2009 on Radio Frequencies as subsequently amended (hereinafter the Frequency Act). The purpose of the Auction is to improve mobile coverage – especially in sparsely populated areas – and to promote effective competition in the telecommunications market to ensure the provision of innovative and advanced services in the Danish market.

In line with the objectives set down in the government's plan "Vækst og udvikling i hele Danmark" (Growth and Development in all of Denmark) from November 2015, ambitious coverage obligations have been set in the 1800 MHz Licences, aimed at improving the availability of voice and broadband services in areas where the current availability is lowest. The coverage obligation is described in Section 3.2 below.

1.2 Spectrum to be awarded

The frequencies in the 1800 MHz frequency band to be awarded in the 1800 MHz Auction comprise 2x64.9 MHz paired frequencies (1720.1-1785.0 MHz paired with 1815.1-1880.0 MHz).

Hi3G has a Licence of 2x10 MHz placed immediately below the frequency band included in the Auction (1710.1-1720.1 MHz paired with 1805.1-1815.1 MHz). The Licence was awarded in 2010 and will terminate on 12 June 2032 ("Hi3G's Existing Licence").

In the event that Hi3G wins additional spectrum in the Auction, the specific placement of Hi3G's Existing Licence can be changed in order to ensure that all Licensees will hold contiguous frequencies after the award.

In this case, it will be possible to include the 2x0.1 MHz at the bottom of the band in the frequency assignment, and thus a total of 2x65 MHz will be effectively available for the Auction.

Should Hi3G not win additional spectrum in the Auction, such a reassignment will not be possible. In this case the 2x0.1 MHz at the bottom of the band will not be assigned, and only the 2x64.9 MHz above Hi3G's Existing Licence will be available in the Auction.

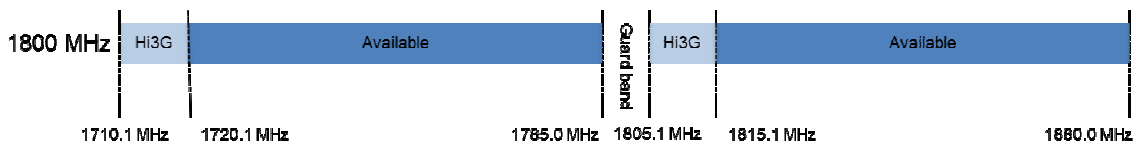


Figure 1: Frequencies in the 1800 MHz band

1.3 Spectrum Cap

Each Bidder may acquire up to 2x30 MHz of 1800 MHz spectrum in the Auction. This does not include existing frequency Licences in the band.

1.4 Coverage obligation

One or more of the Licences awarded in this process will be subject to a coverage obligation. Licensees shall ensure provision of a mobile voice service and a mobile broadband service offering users, for most of the time, the experience of a connection with a download speed of 30 Mbit/s and an upload speed of 3 Mbit/s. The obligation is applicable to the addresses included in the coverage areas, see Section 3.2. To allow operators to share the coverage obligation, three 'Coverage Area Groups' have been defined, each of which includes a number of coverage areas.

It is only necessary that one operator in each Coverage Area Group must be subject to the coverage obligation.

1.5 Overview of the process for assigning spectrum and the coverage obligation

The Auction will determine which Licensee(s) will be subject to the coverage obligation in each of the Coverage Area Groups as follows:

- there will be three blocks of 2x10 MHz available, each of which is subject to the coverage obligation in one of the three Coverage Area Groups (we call these the A lots);
- each Bidder is allowed to apply for at most one A lot; an application for an A lot is regarded as a bid for an A lot at the stipulated reserve price;
- if three or more Bidders apply for an A lot, all of the available A lots will be assigned, which implies that the coverage obligation in all three Coverage Area Groups will be assigned prior to the third auction stage; and
- if fewer than three Bidders apply for assignment of A lots, the coverage obligation will be assigned in the number of Coverage Area Groups corresponding to the number of A lots assigned. In this case, the remaining spectrum (including any spectrum that would have been available as an unassigned A lot) will be subject to the coverage obligation in the remaining Coverage Area Groups.

The A lots will be assigned in the first auction stage. The Coverage Area Groups to be assigned to the individual winners of A lots will be determined in the second auction stage. The remaining spectrum (B lots) and the coverage obligation in any Coverage Area Groups where the obligation has not been assigned through A lots will be assigned in the third auction stage.

In the third auction stage, an approach similar to the 800 MHz auction in 2012 will be adopted for assigning the coverage obligation if fewer than three A lots are assigned in the first auction stage:

- all the remaining frequencies (B lots) are subject to the coverage obligation in all remaining Coverage Area Groups;
- Bidders who bid for spectrum will also be allowed to bid for exemptions from the coverage obligation in each of the remaining Coverage Area Groups; this provides Bidders with an opportunity to bid for being exempted from meeting the coverage obligation in one or more Coverage Area Groups; and

- the number of available exemptions from the coverage obligation will be determined in the Auction and will be equal to the number of winners of spectrum minus one; this ensures that not all winners can be exempt from the coverage obligation in all the Coverage Area Groups, and that at least one winner must fulfil the coverage obligation in each group.

If it is not possible to assign the coverage obligation in all three Coverage Area Groups by the end of the Auction, the Auction will stop, and thus no frequencies will be awarded in this Auction, regardless of whether any A lots and Coverage Area Groups had been assigned in the first and second auction stages.

1.6 The Auction process

The Auction process consists of the following stages:

- **The Application Stage**, in which Bidders submit applications to participate in the Auction and furnish deposits, and indicate whether they wish to be assigned an A lot (along with any preferred Coverage Area Group).
- **The Qualification Stage**, in which the Danish Energy Agency determines which Bidders are qualified to participate in the Auction and whether an auction is to be held.
- The Auction, which includes:
 - the first auction stage, in which A lots are assigned;
 - the second auction stage, in which Coverage Area Groups subject to the coverage obligation are assigned to winners of A lots;
 - the third auction stage, in which B lots and any exemptions from the coverage obligation are assigned; and
 - the fourth auction stage, in which specific frequencies are assigned to each winner of A and B lots.
- **The Grant Stage**, in which winning Bidders make payments for their Licences and the Danish Energy Agency issues the Licences.

1.7 Structure of the Memorandum

The remainder of the Memorandum is structured as follows:

- Section 2 provides details about the lots available in the Auction.
- Section 3 provides the Licence terms and conditions, including details of the available spectrum, the coverage obligation, Coverage Area Groups and exemptions from the coverage obligation, usage requirements, the Licence duration and obligations regarding the territorial extent of the Licences, revocation of Licences, modification of Licence terms, and details regarding frequency charges.
- Section 4 describes the regulatory framework governing the auction process, the provisions for site sharing and network sharing, the provisions for Licence trading and change of use, and VAT treatment of Licences.
- Section 5 contains an overview of the auction process, including the time schedule, rules on ownership structure of Bidders and Bidder behaviour during the auction process, and circumstances under which Bidders may be subject to sanctions.
- Section 6 explains the Application and Qualification Stages, including information on deposits and details on the Electronic Auction System (EAS) that will be used for the third and fourth auction stages.
- Section 7 provides the rules for the Auction.
- Section 8 explains the procedure for the granting of Licences, including information on the announcement of the Auction result and payment of the Licence Price.
- Section 9 contains information about communication between the Danish Energy Agency and Bidders before and during the Auction, and procedures for exceptional circumstances.

2 Lots and exemption lots available in the Auction

This section contains a more detailed description of the spectrum lots and any exemptions from the coverage obligation available in the Auction.

2.1 Spectrum lots

The spectrum available for this Auction is offered in two categories of lots:

- A lots: lots of 2x10 MHz subject to the coverage obligation in one of the three Coverage Area Groups; three A lots will be offered in the first auction stage, and each Bidder may apply for assignment of at most one A lot; an application for assignment of an A lot is regarded as a bid for an A lot at the stipulated reserve price; and
- B lots: lots of 2x5¹ MHz subject to the coverage obligation in all Coverage Area Groups in which the coverage obligation has not already been assigned along with A lots (i.e. depending on the assigned number of A lots, B lots may either be without the coverage obligation or be subject to the coverage obligation in one, two or three Coverage Area Groups). Thus the number of available B lots will depend on the number of A lots assigned; in the event that one or more A lots remain unassigned after the first auction stage, each of these lots will be included in the Auction as two B lots (i.e. depending on the number of A lots assigned, the number of B lots available will be either 13, 11, 9 or 7).

All lots are offered as generic frequency blocks. This means that no specific frequency ranges are associated with the individual A and B lots, but that the lots only specify an amount of spectrum. The specific frequency ranges included in the respective Licences will only be determined after establishing the total amount of spectrum (i.e. the total number of A and B lots) to be assigned to each winner. This ensures that each winning Bidder can be assigned contiguous frequencies.

2.2 Exemptions from the coverage obligation

There are three different categories of exemption lots:

- **Category C1:** Exemption from the coverage obligation in group 1;

¹ In case Hi3G does not win spectrum, the winner assigned the lot at the top of the band, will be assigned a frequency lot of 2x4.9 MHz.

- **Category C2:** Exemption from the coverage obligation in group 2; and
- **Category C3:** Exemption from the coverage obligation in group 3.

Exemption lots are only offered if not all A lots and the associated Coverage Area Groups have already been assigned in the first and second auction stages. A Bidder who acquires an exemption lot for a given Coverage Area Group alongside any number of B lots will not be subject to the coverage obligation in the corresponding Coverage Area Group (which would have otherwise applied to the B lots by default). Bidders may only bid for exemption lots when simultaneously bidding for B lots.

The number of exemption lots available in each exemption lot category will be:

- zero, if the coverage obligation in the corresponding Coverage Area Group has already been assigned through an A lot; or
- the number of winners of B lots minus one, if the coverage obligation in a Coverage Area Group has not already been assigned through an A lot; in this case, the number of exemption lots available depends on the number of winners of B lots.

2.3 Overview of available lots and exemptions from the coverage obligation

The number of spectrum and exemption lots offered in the Auction is summarised in Table 1.

Available A lots	Assigned A lots	Available B lots	Coverage obligation on B lots*	Available exemption lots*
3	3	7	None	None
	2	9	In one Coverage Area Group	In one Coverage Area Group
	1	11	In two Coverage Area Groups	In two Coverage Area Groups
	0	13	In all three Coverage Area Groups	In all three Coverage Area Groups

*The specific Coverage Area Groups and hence exemptions depend on the outcome of the first and second auction stages.

Table 1: Overview of spectrum lots and exemptions from the coverage obligation offered in the Auction

2.4 Reserve prices

The reserve prices for the different lots are shown in Table 2.

Lot category	Reserve price per lot
A	DKK 50 million
B	DKK 25 million
C1	DKK 0
C2	DKK 0
C3	DKK 0

Table 2: Reserve prices

3 Licence terms and conditions

This section describes the Licence terms and conditions of the available Licences in this auction.

3.1 The 1800 MHz frequency band

The frequencies in the 1800 MHz frequency band to be awarded in the 1800 MHz auction comprise 2x64.9 MHz paired frequencies (1720.1-1785.0 MHz paired with 1815.1-1880.0 MHz).

Hi3G has a Licence of 2x10 MHz placed immediately below the frequency band included in the Auction (1710.1-1720.1 MHz paired with 1805.1-1815.1 MHz). The Licence was awarded in 2010 and will expire on 12 June 2032 ('Hi3G's Existing Licence').

In the event that Hi3G wins additional spectrum in the Auction, the specific placement of Hi3G's Existing Licence can be changed in order to ensure that all Licensees will hold contiguous frequencies after the award.

In this case, it will be possible to include the 2x0.1 MHz at the bottom of the band in the frequency assignment, and thus a total of 2x65 MHz will be effectively available for the Auction.

Should Hi3G not win additional spectrum in the Auction, such a reassignment will not be possible. In this case the 2x0.1 MHz at the bottom of the band will not be assigned, and only the 2x64.9 MHz above Hi3G's Existing Licence will be available in the Auction.

The frequencies are available nationally, and the Licences will be issued as nationwide Licences.

A single Licence will be awarded to each winning Bidder based on the amount of spectrum won, which will be at least 2x4.9 MHz and at most 2x30 MHz. The spectrum assigned to each winner in this auction will form a contiguous frequency range.

Licensees must accept the present and future use of frequencies in adjacent frequency bands. The uses of the bands adjacent to the 1800 MHz band are summarised in Figure 2 below.

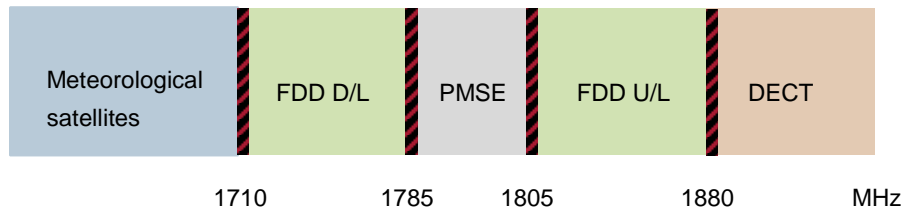


Figure 2: Uses of bands adjacent to the 1800 MHz band

The 1785-1805 MHz frequency range (the centre gap) is allocated for certain PMSE applications (primarily wireless microphones) according to the Commission Implementing Decision (2014/641/EU) on harmonised technical conditions of radio spectrum use by wireless audio programme making and special events equipment in the EU.

The 1880-1900 MHz frequency range is in use for DECT according to Council Directive (91/287/EEC) on the frequency bands to be designated for the coordinated introduction of Digital European Cordless Telecommunications (DECT) into the EU.

3.2 Coverage obligation and exemptions

Licences may be subject to a coverage obligation to supply a mobile voice service and a mobile broadband service in one or more specified Coverage Area Groups. The coverage areas are divided into three non-overlapping Coverage Area Groups equally distributed throughout Denmark, cf. Annex 1 to the Minister's Decision in Annex B.

Licensees shall ensure provision, not later than 13 December 2019, of a mobile voice service and a mobile broadband service offering users, for most of the time, the experience of a connection with a download speed of at least 30 Mbit/s and an upload speed of at least 3 Mbit/s. The coverage obligation applies at the addresses in the coverage area(s) specified in the Licence.

Licensees are not required to fulfil the coverage obligation with the 1800 MHz frequencies included in their Licence. Hence the coverage obligation can be fulfilled by using any frequencies that the Licensees have at their disposal.

The coverage obligation may also be fulfilled via national roaming agreements. In this case the requirements as to how the Licensees must document compliance with the coverage obligation are the same as if the Licensee undertakes its own deployment of the infrastructure required to fulfil the coverage obligation, see below on documentation of compliance with the coverage obligation.

As for the required provision of a mobile voice service, the coverage obligation may be fulfilled by offering Wi-Fi-calling or a similar service.

As for the required provision of a mobile broadband service, the coverage obligation may be fulfilled by using WLAN technology in the licence-exempt frequency bands (2.4 and 5 GHz). However, this is conditional on the WLAN technology being integrated seamlessly with terrestrial systems capable of providing electronic communications services as stated in the annex to Commission Decision 2009/766/EC as amended by Commission Implementing Decision 2011/251/EU. As an example, WLAN may be used integrated with an LTE network using LTE-WLAN Aggregation (LWA) as specified by 3GPP. This means for example, that the user shall not activate the WLAN connection or for example have a password for a WLAN access point or the like. It is not the intention that the coverage obligation can be met, for example, by connecting a standard Wi-Fi router to an xDSL or coax connection. This means that an ordinary Wi-Fi connection cannot be used to meet the coverage obligation. However, section 3.7.2 about amending coverage requirements in the license may apply.

Documentation of compliance with the coverage obligation shall consist of coverage calculations/simulations supplemented with measurements confirming such calculations/simulations. When preparing calculations/simulations, the Licensee can use the method that it finds most suitable, taking into account the technology used and the implementation of the network. Documentation cannot depend on whether customers have bought a subscription from the Licensee in question.

Either the Licensee can provide documentation for the functioning of the network with chosen technical parameters, or it can simulate the grade-of-service that it can deliver in the network with the chosen technical parameters and other operational parameters. These parameters are, for example: Transmitter power, propagation model, link budget, geographical distribution of users, number of simultaneous users, usage pattern etc.

Calculations/simulations must be verified by actual measurements. These measurements must be made in a radio environment (i.e. terrain conditions), over distances and with equipment that closely corresponds to the conditions that will apply in relation to the end user. Information on calculation model, measurement results and correlation degree between calculation and measurement results must be included in the documentation that the Licensee submits to the Danish Energy Agency. Licensees must therefore make enough measurements to verify the calculation model. The measurements can be made during roll out of the infrastructure. The documentation must not depend on whether the end users are customers with the Licensee in question.

The Licensee shall provide documentation for the fulfilment of the coverage obligation not later than 13 March 2020.

The coverage areas that are subject to the coverage obligation are shown below. The relevant addresses included in each Coverage Area Group are appended as Annex K.

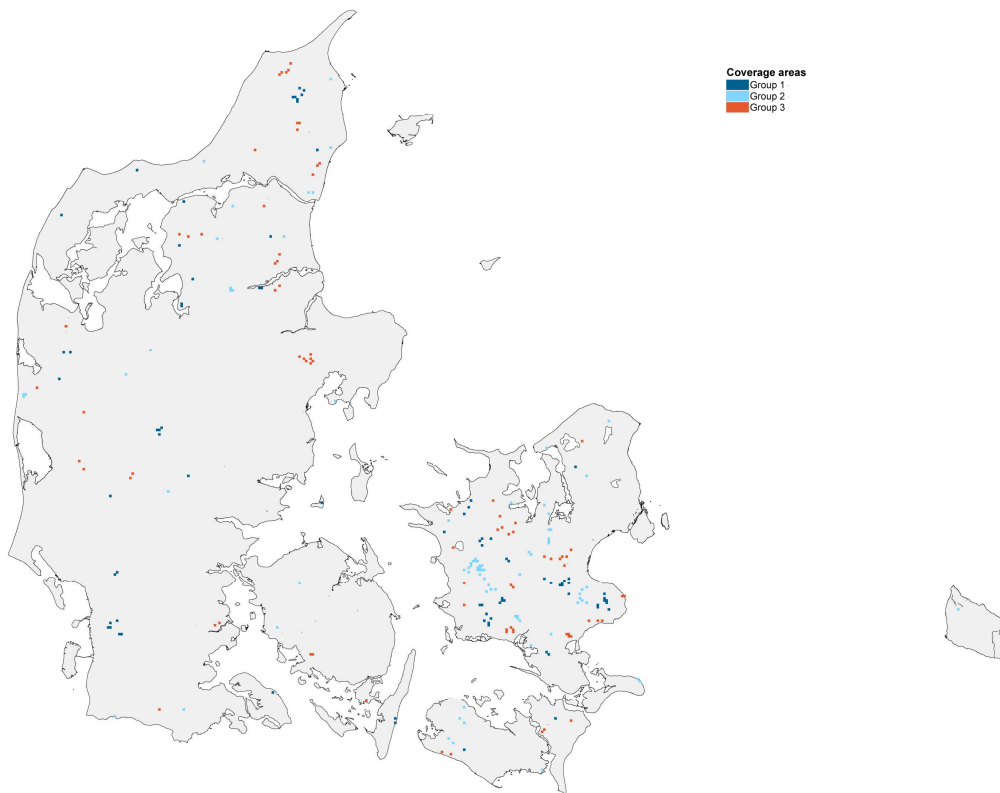


Figure 3: Coverage Area Groups subject to the coverage obligation

The coverage obligation will apply to:

- winners of A lots in the respective Coverage Area Group assigned to them in the second auction stage; and
- winners of B lots in all the Coverage Area Groups that have not been assigned along with A lots and for which they have not acquired an exemption from the coverage obligation.

Thus, the Auction will ensure that at least one Licensee in each Coverage Area Group is subject to the coverage obligation. See the example below.

Suppose that only one bidder, Bidder 1, applies for an A lot.

In the first auction stage Bidder 1 will be assigned one A lot.

In the second auction stage Bidder 1 will be assigned the Coverage Area Group it has specified as its preferred one on its application. Suppose that Group 1 is assigned to the Bidder.

In this case, all B lots in the third auction stage are subject to the coverage obligation in Groups 2 and 3, and exemption lots C2 and C3 are available.

Suppose that Bidder 2 wins one or more B lots along with exemptions C2 and C3. As a result, the Bidder's Licence will not be subject to a coverage obligation.

Suppose that Bidder 3 wins one or more B lots and exemption lot C2. As a result, the Bidder's Licence will be subject to a coverage obligation in Group 3.

Suppose that Bidder 1 wins one or more B lots and exemption lot C3. As a result, the Bidder's Licence will be subject to a coverage obligation in Groups 1 and 2.

Example 1: Coverage obligation on B lots, availability of exemption lots and coverage obligations applicable to Licences

3.3 Usage requirements

Under Section 10(3), No. 2, of the Frequency Act, the Danish Energy Agency may lay down usage requirements in Licences issued on the basis of an auction or tender process. The usage requirements that will be laid down in the 1800 MHz Licences are described below, see Draft Licence in Annex D.

Antennas and transmitting and receiving equipment capable of using the frequencies covered by the Licence shall be installed by the Licensee not later than 13 December 2019 at a minimum of 100 mast positions. The equipment at the relevant mast positions shall be connected to the necessary telecommunications infrastructure in such a way as to enable the Licensee, via the relevant mast positions, to offer at least one electronic communications service (at the Licensee's own discretion) to end-users by using the frequencies covered by the Licence.

In relation to the Danish Energy Agency's supervision of the usage requirement, the Licensee shall forward, not later than 13 March 2020, an overview to the Danish Energy Agency specifying the mast positions at which antennas and transmitting and receiving equipment have been installed such that at least one electronic communications service can be offered to end-users by using the frequencies covered by the Licence. In the overview, the Licensee shall indicate the geographical coordinates of the mast positions and the type of the installed transmitting and receiving equipment.

3.4 Usage restrictions

Maximum allowed transmitting power (ERP) per channel from a base station:

$$P(e.r.p.) \leq 60 \text{ dBm}$$

A channel is defined as the bandwidth necessary for the selected technology (e.g. for GSM a channel is 200 kHz, and for LTE a channel can be in the range 1.4 – 20 MHz).

3.4.1 Out-of-band emissions

Base station emissions shall comply with the relevant harmonised standard in the ETSI EN 301 908 series applicable to the technology chosen.

3.4.2 Restrictions due to international coordination

Licensees are bound by existing and future agreements on border coordination between Denmark and neighbouring countries.

Denmark has border coordination agreements with Sweden and Germany relating to the 1710-1785/1805-1880 MHz frequency range. For further details, the coordination agreements with Sweden and Germany are annexed as Annexes I and J.

3.5 Duration of Licences

The 1800 MHz Licences have duration of 15 years and are valid from 13 June 2017 until 12 June 2032. Upon expiry, the Licences shall expire without further notice without an option for extension.

The duration of the 1800 MHz Licences is set to synchronise the expiry of these Licences with the expiry of the existing 1800 MHz Licence held by Hi3G.

3.6 Geographical extent of Licences

The frequency Licences will be issued as nationwide Licences.

The extent of a nationwide frequency Licence is to be determined by the rules of international law in conjunction with Danish law.

Under international law, the land territory is deemed to include inner territorial waters plus outer territorial waters. Under Danish law, Danish outer territorial waters are defined as up to 12 nautical miles from the so-called baseline, cf. Executive Order No. 242 of 21 April 1999 concerning the Delimitation of Denmark's Territorial Sea. The baseline largely corresponds to the coastline including islands near the coast.

The geographical extent of a nationwide frequency Licence will therefore be the land territory plus inner and outer territorial waters.

The Licences do not reflect an exclusive right since the same frequencies might possibly be used for other purposes in the future which do not cause unacceptable interference to the Licensee.

Frequencies in the band 1710-1785 MHz and 1805-1880 MHz are also used for public mobile communications on board vessels (MCV) and aircraft (MCA) in accordance with Commission Implementing Decision 2008/294/EC on MCA services as amended by Commission Implementing Decision 2013/654/EU and Commission Implementing Decision 2010/166/EU on MCV services. In the future, it cannot be precluded that the possibility of other uses may arise. Shared use may occur within the geographical area covered by the nationwide Licences, but it will only be possible on condition that the Licensee shall not suffer unacceptable interference.

3.7 Revocation of Licences and modification of Licence terms

3.7.1 Revocation of Licence

The Danish Energy Agency may revoke a Licence after it has been issued if the Agency finds that the Licensee, the Licensee's Connected Persons or Insiders have violated the provisions described in clause 80 of the Danish Energy Agency's Decision relating to joint control of a Bidder by two or more Mobile Operators; Bidder relationships and behaviour during the Auction; payment of the Licence Price and the Auction costs and failure to provide required information, or provision of incorrect or imprecise information, cf. clauses 86-88.

If a Licence is revoked by the Danish Energy Agency, the Licensee shall pay on demand an amount equivalent to 30% of the Licence Price, or if a smaller amount of the Licence Price is outstanding at the time of revocation, then such smaller amount (see clause 89 of the Danish Energy Agency's Decision).

If a Licence is revoked, the Licensee shall not be entitled to receive reimbursement of any amounts already paid in connection with the Auction as described in clauses 91-92 of the Danish Energy Agency's Decision.

In addition to the above-mentioned rules on revocation specified in the Danish Energy Agency's Decision, the Frequency Act contains rules on revocation that will also be applicable to Licences issued after holding the present auction.

This means that the Danish Energy Agency, subject to one year's notice, may revoke a Licence if this is necessary in order to ensure fulfilment of commitments following from international frequency cooperation or to meet essential public interest considerations, cf. Section 24 of the Frequency Act.

The Danish Energy Agency shall revoke a Licence if the Licensee fails to pay frequency charges due, cf. Section 25 of the Frequency Act. The Danish Energy Agency may revoke a Licence if the Licensee grossly violates the Frequency Act, rules laid down in pursuance of the Act, or terms in the Licence, cf. Section 26 of the Frequency Act.

3.7.2 Modification of Licence

It follows from Section 23 of the Frequency Act that the Danish Energy Agency may modify the terms of frequency Licences in order to ensure fulfilment of commitments following from international frequency cooperation or to meet essential public interest considerations. This will be done at one year's notice, unless it is necessary to protect human life or health.

Terms of Licences may also be modified on account of unacceptable interference, which is not attributable to infringements, but where it is necessary to modify the terms in order to prevent further interference in accordance with Section 23 of the Frequency Act.

Under the Frequency Act, it is also possible for the Danish Energy Agency, subject to application, to relax terms that have been stipulated in order to avoid unacceptable interference if, in the Agency's opinion, it is no longer necessary to maintain such terms.

Modification of the coverage obligation in 1800 MHz Licences

A Licensee may apply for a relaxation of the coverage obligation in exceptional cases as described in clause 5 of the Minister's Decision. This option for relaxation only applies in situations where the Licensee is able to duly prove that the Licensee cannot ensure supply of a mobile broadband service or mobile voice service in accordance with the coverage obligation at specific addresses due to conditions that the Licensee has no control over, including environmental, conservation-related or exceptional radio engineering conditions. The possibility of relaxation may for instance relate to cases in which the Licensee can substantiate that the coverage obligation for specific addresses cannot be realised by the date of fulfilment because the processing of an application for permission to establish a mast or set up an antenna has not been finalised. In such cases it may be possible to relax the coverage obligation in relation to the date of fulfilment.

Another example is the fact that there may be exceptional radio engineering conditions which imply that it is not possible to deliver the speed included in the coverage obligation.

A third example is that in exceptional cases there may be granted a possibility of creating coverage using a technology other than mobile technology, for instance

wireless technology (such as WiFi), if it is not possible to deliver coverage using mobile technology as defined in Section 3(2).

Here a possible relaxation may consist in the Licensee being allowed to deliver, at a specific address, an experienced download speed lower than 30 Mbit/s and/or an upload speed lower than 3 Mbit/s, or the Licensee may be exempted altogether from fulfilling the coverage obligation at a specific address. This means that if there is an area with five addresses, but it is only possible to provide coverage for four addresses, the coverage obligation might be relaxed in relation to the address at which it is not possible to provide coverage.

Before a Licence can be relaxed by way of a complete exemption from fulfilling the coverage obligation for one or more addresses in an area, it will firstly be examined if a relaxation may be granted instead with regard to the date of fulfilling the coverage obligation or the speeds to be delivered, as described above.

Thus a complete exemption from covering a specific address may only be granted in quite exceptional cases, and it may only be done after it has been examined if it will be possible to deliver a lower speed or postpone the date of fulfilment. Whether the coverage obligation can be relaxed and to what extent will thus depend on a concrete assessment in each individual case.

3.7.3 Relaxation of the coverage obligation as a result of new auctions

If the Danish Energy Agency, in connection with the disposal of frequency bands other than the 1800 MHz band, issues Licences with coverage obligations, the Agency may relax terms on coverage in the 1800 MHz Licences as described in clause 6 of the Minister's Decision. This may be relevant, for example, where coverage areas coincide wholly or partly with other Licences, or where other Licences set greater requirements for provision of broadband speeds etc.

3.8 Annual frequency charges

Licensees will be required to pay annual charges to the Danish Energy Agency for the use of frequencies, as outlined in the Frequency Licence (Annex D). This is in addition to the annual Deferred Payment installments (if the Licensee has not chosen to pay the Licence price in full) that form part of the Licence Price. The frequency charge is set annually in the Finance Act. The charge will be calculated in accordance with a charging structure that consists of a fixed component and a variable component, which together form the total annual charge. The frequency charge does not include VAT.

As an example in 2016 it is expected that the fixed component will be DKK 600 per Licence, and the variable component of the charge will be DKK 56,405 per MHz for the Licences. Thus, the total annual frequency charge in 2018 for a Licence consisting of 2x10 MHz is expected to be DKK 1,128,100 and for a 2x5 MHz Licence it is expected

to be DKK 554,050. The frequency charges are also published on the Danish Energy Agency's website:

<http://www.ens.dk>.

4 Regulation

Section 4 describes the regulatory framework governing the auction process, the provisions for site sharing and network sharing; the provisions for Licence trading and change of use and VAT treatment of Licences.

4.1 Regulatory framework

This section reviews key regulatory conditions for the award. Regulatory conditions other than those mentioned here may be relevant. Bidders are therefore recommended to consult the relevant legislation in the area. Reference is also made to the Danish Energy Agency's website: www.ens.dk.

4.1.1 Frequency Act

The Frequency Act came into force on 1 January 2010, and has been amended most recently by Act No. 131 of 16 February 2016, when authority was provided for the Danish Energy Agency to lay down terms on usage requirements in Licences issued by auction or tendering.

According to Section 9(3) and Section 10(1) of the Frequency Act, rules and conditions for the Auction are laid down in the Minister's Decision, cf. Annex B, and the Danish Energy Agency's Decision, cf. Annex C, respectively. The above-mentioned rules of the Frequency Act apply when Licences are issued and essential public interest considerations have to be met.

The Minister's Decision determines the overall framework for the 1800 MHz auction, including the type and number of Licences to be included in the Auction, minimum requirements (e.g. coverage obligations) to be met and reserve prices in the Auction.

Based on the Minister's Decision, the Danish Energy Agency further decides on the implementation of the Auction and the terms of Licences that will be issued in connection with the Auction. For instance, the Danish Energy Agency's Decision will determine the Auction format and rules, conditions for participation in the Auction and deposit requirements, cf. Section 10(2) of the Frequency Act.

4.1.2 Regulation of the Danish telecommunications market

The Danish telecommunications market is regulated by the Danish Energy Agency and the Danish Business Authority. All electronic communications services, including mobile voice telephony and mobile broadband services, as well as the infrastructure related to these services, have been liberalised.

No Licence is required to provide electronic communications networks or services in Denmark. However, all providers must fulfil the obligations in the Executive Order on the Provision of Electronic Communications Networks and Services².

A Licence may be required for use of scarce resources such as radio spectrum.

4.1.3 Telecommunications providers' assistance to the police

All providers of electronic communications network and services are required to ensure, without expense to the State, that their technical equipment and systems are arranged in such a manner, cf. Section 10(1)³ of the Telecommunications Act, that the police may intervene in the secrecy of communications. Providers of electronic communications networks or services are also required to register their undertaking with the Telecommunications Centre of the Danish National Police. This obligation appears from Section 12(1) of the Telecommunications Act.

For the purpose of investigation and prosecution of criminal offences, all providers are also required to register and store telecommunications traffic data generated or processed in their networks, cf. Section 1 of the Executive Order on Logging⁴. Information on the data to be stored and the rules relating to logging can be found in the Executive Order on Logging, which falls under the Ministry of Justice.

Furthermore, it should be mentioned that the Ministry of Justice has set up a working group to examine if it would be possible in the future to register and store data on end-users' access to the internet via session logging.

4.1.4 Network and information security

The principal task of the Centre for Cyber Security is to support a high level of information security in the information and communication technology infrastructure on which activities vital to society depend. The Centre for Cyber Security administers the rules of the Act on Network and Information Security⁵. These rules include requirements for information security for providers of publicly available networks and services; information and notification duties regarding network and information security; access by emergency management authorities to electronic communications in

² Executive Order No. 715 of 23 June 2011 on the Provision of Electronic Communications Networks and Services.

³ Act on Electronic Communications Networks and Services, cf. Consolidated Act No. 128 of 7 February 2014.

⁴ Executive Order No. 660 amending Executive Order on Registration and Storage of Telecommunications Traffic Data by Providers of Electronic Communications Networks and Electronic Communications Services dated 19 June 2014.

⁵ Act No. 1567 of 15 December 2015.

emergency situations etc. and security clearance of employees in the area of network and information security.

4.1.5 Competition Act

The Danish Competition Act⁶ applies to restrictions of competition that affect the Danish market. The Danish competition authorities are required to apply EU competition law, i.e. Articles 101-102 TEUF, if any such behaviour also appreciably affects inter-state trade.

The substantive application of Sections 6 and 11 of the Competition Act, i.e. the Danish provisions concerning the prohibition of anti-competitive agreements and the abuse of a dominant position, and Articles 101-102 TEUF, is mainly concurrent. It follows from the preparatory acts to the Danish Competition Act that the Act is to be interpreted in accordance with EU competition regulation and case law, unless otherwise specifically stated.

4.1.6 EU regulation

The European Parliament, the Council and the European Commission have adopted a number of communications, directives and decisions on electronic communications networks and services which are relevant to the use of the 1800 MHz band.

In 2009, the European Commission decided on harmonised technical conditions for using the 1800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the EU⁷ making the spectrum available for UMTS. This decision was amended by a new implementing decision in 2011⁸ adding LTE and WiMAX to the list of terrestrial systems for which the spectrum is available. However, the use of spectrum for other systems is not excluded.

The European Commission's decision implies inter alia an obligation for Member States to make it possible to use the 1800 MHz frequency band for electronic communications services. The decision also sets out mandatory technical criteria to be used when the 1800 MHz band is used for electronic communications services using UMTS, LTE or WiMAX technology.

⁶ The Danish Competition Act, cf. Consolidated Competition Act No. 869 of 8 July 2015.

⁷ Commission Decision 2009/766/EU of 16 October 2009 on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community.

⁸ Commission Implementing Decision 2011/251/EU of 18 April 2011 amending Decision 2009/766/EC on the harmonisation of the 900 MHz and 1800 MHz frequency bands for terrestrial systems capable of providing pan-European electronic communications services in the Community.

EU regulation also includes decisions making the spectrum available for other services, including mobile communications on board aircraft (MCA⁹) and mobile communication on board vessels (MCV¹⁰).

Other highly relevant EU regulation includes the European Commission's guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C165/03), the European Parliament's and the Council's regulation on roaming on public mobile telephone networks within the Community, the European Commission's recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU¹¹ and the telecommunications directive package of 7 March 2002 with amendments of 25 November 2009¹².

4.1.7 Health and safety issues

There are a number of EU health and safety requirements to be met by all radio communications equipment, and these regulations also apply in Denmark. The requirements reflect, for example, recommendations from the International Commission on Non-Ionising Radiation Protection (ICNIRP) on certain threshold levels for emission.

⁹ Commission Decision 2008/294/EC of 7 April 2008 on harmonised conditions of spectrum use for the operation of mobile communication services on board aircraft (MCA services) in the Community.

¹⁰ Commission Decision 2010/166/EU of 19 March 2010 on harmonised conditions of use of radio spectrum for mobile communication services on board vessels (MCV services) in the European Union.

¹¹ Regulation (EC) No 717/2007 of the European Parliament and the Council of 27 June 2007 on roaming on public mobile telephone networks within the Community and amending Directive 2002/21/EC; Regulation (EC) No 544/2009 of the European Parliament and the Council of 18 June 2009 amending Regulation (EC) No 717/2007 on roaming on public mobile telephone networks within the Community and Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services; and Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/DEC).

¹² Comprising European Parliament and Council decision 676/2002/EC of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision); European Parliament and Council directive 2002/19/EC of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive); European Parliament and Council directive 2002/20/EC of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive); European Parliament and Council directive 2002/21/EC of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive); European Parliament and Council directive 2002/22/EC of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive); European Parliament and Council directive 2002/58/EC of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on Privacy and Electronic Communications).

Amendments to the telecommunications directive package were adopted in November 2009. The relevant provisions for the frequency legislation are implemented in the Frequency Act and regulations issued pursuant thereto. The following amendments have been adopted: European Parliament and Council Directive 2009/140/EC of 25 November 2009 amending Directive 2002/19/EC on access to and interconnection of, electronic communications networks and services, and 2002/20/EC on the authorization of electronic communications networks and services and European Parliament and Council Directive 2009/136/EC of 25 November 2009 amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks, Directive 2002/58/EC concerning the processing of personal data and protection of privacy in the electronic communications sector and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for enforcing consumer protection laws.

It follows from Danish legislation on radio equipment that radio equipment shall comply with the essential requirements of the R&TTE Directive in order for the equipment to be used¹³. Installations for base stations must fulfil the same essential requirements although it is not compulsory to issue a declaration of conformity or assign a CE-mark. Via these essential requirements the provider of a radio service is responsible for compliance with the regulations based on the ICNIRP recommendations.

4.2 Site sharing and network sharing

4.2.1 Site sharing

Denmark has a regime relating to site sharing which requires inter alia all frequency Licensees to meet requests from other operators to share sites (including masts and tall buildings)¹⁴. For issues relating to mast siting, the Danish Energy Agency acts under the Act on Establishment and Joint Utilisation of Masts for Radiocommunications Purposes etc (the Masts Act)¹⁵. The aim of the Masts Act is to limit the number of masts, while providing for optimal wireless services.

An owner who enters into an agreement for the joint utilisation of a site, or receiving an order to do so, is entitled to compensation for hosting additional equipment. The party making the request for joint utilisation or receiving access to joint utilisation is obliged to pay. There are framework agreements concerning fees for joint utilisation. Further information can be found at: www.teleindustrien.dk.

Under Section 16 of the Masts Act the local authorities consult the Danish Energy Agency before granting an application on mast placement for the purpose of receiving a statement on whether other Licensees have plans for establishing antennas in the same geographical area so that the local authorities are able to coordinate the mast sharing. Under Section 18, the Danish Energy Agency may also provide an opinion to local authorities on radio engineering, again regarding applications for mast siting.

¹³ Act No. 260 on Radio Equipment and Electromagnetic Matters of 16 March 2016. The Act will come into force on 13 June 2016 and contains provisions implementing parts of Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility; parts of Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC; and parts of Commission Directive 2008/63/EC of 20 June 2008 on competition in the markets in telecommunications terminal equipment.

¹⁴ The regulation on site sharing covers all masts for radio communications purposes as well as other tall buildings and structures upon which antennas can be placed, cf. Section 1(2) of the Masts Act, cf. Consolidated Act No. 681 of 23 June 2004.

¹⁵ The Masts Act, on the Establishment and Joint Utilisation of Masts for Radiocommunications Purposes, etc.

Holders of Licences to use frequencies for public mobile communications networks with associated basic services and enterprises, which under the Act on Radio and Television Services¹⁶ have a Licence for the operation of nationwide radio or TV services via the terrestrial transmission network, shall submit quarterly information to the Danish Energy Agency about existing antenna positions and radio coverage plans for at least two years ahead.

In order to increase transparency on antenna siting, the Masts Act amendment of 2004 provided for a publicly available database of antenna sites. This database is available at www.mastedatabasen.dk or www.it-borger.dk. The database includes the location of existing antennas; plans for new antennas; and the type of service and technology for each individual antenna position etc.

Sharing of passive infrastructure

From 1 July 2016, it is possible for network operators, including providers of electronic communications networks and services, to get access to the passive physical infrastructure of other network operators, for example empty ducts, across utility sectors, including telecommunications, power, water and heating supply etc., for the purpose of establishing high-speed networks for electronic communication. In relation to sharing of passive physical infrastructure, the Danish Energy Agency acts under the Act on Cable Laying Access and Expropriation etc. for Telecommunications Purposes.¹⁷

Access to a network operator's passive infrastructure is granted by request on reasonable terms, including in relation to prices. A network operator may refuse a request based on objective criteria, for example the technical suitability of the infrastructure, available space in the infrastructure, including considerations such as future business plans, the risk of significant impact on other services placed in the same infrastructure etc.

For the purpose of assessing the suitability of the passive physical infrastructure, a network operator may request access to information and access to surveying another network operator's passive physical infrastructure. Access to information and surveying is given on reasonable terms, including in relation to prices. Access to information and surveying can be limited when necessary for reasons such as network security and integrity, national security, confidentiality, operational and business secrets etc.

¹⁶ Act on Radio and Television Services, cf. Consolidated Act No. 255 of 20 March 2014.

¹⁷ Cf. Consolidated Act No. 662 of 10 July 2003 as amended most recently by Act No. 741 of 1 June 2015. With effect from 1 July 2016, the title of the Act will be Act on Cable Laying Access, Establishment and Utilisation of Infrastructure for Telecommunications Purposes and Utilisation of Infrastructure Across Utility Sectors etc.

4.2.2 Network sharing

Network sharing is not specifically regulated for Licences to be issued on the basis of the results of this auction. Thus the Licence terms and the statutory rules on the use of frequencies will not restrict agreements on network sharing, and therefore network sharing is not subject to the Danish Energy Agency's prior approval.

It should be noted, however, that this does not imply that the Danish Energy Agency has taken any position on possible competition law aspects of such network sharing agreements. This falls within the jurisdiction of the Competition Authorities.

4.3 Licence trading

Licences to use frequencies may be transferred or returned, wholly or partly (divided either in frequency portions or geographically). This follows from Section 21 of the Frequency Act.

In this context, the Danish Energy Agency has established rules prescribing that a Licensee's plans on transfer shall be notified to the Danish Energy Agency, and that this information is published by the Danish Energy Agency, cf. Section 5 of Executive Order No. 1420 of 3 December 2015 on Licences to Use Radio Frequencies. A Licensee shall notify the Danish Energy Agency immediately after having made an agreement on transfer. This information shall be published by the Danish Energy Agency.

In addition, there are rules prescribing that transfer or return of parts of Licences issued after an auction or a public tender process shall be subject to the Danish Energy Agency's prior approval. This follows from Section 21(4) and Section 58(5) of the Frequency Act, cf. Executive Order No. 1129 of 1 December 2009 on the Transfer and Return of Certain Licences to Use Radio Frequencies.

4.4 Treatment of Licence Price for VAT purposes

On 26 June 2007, the European Court of Justice delivered two judgments about payment of VAT on the award of Licences for the use of radio frequencies that are subject to a fee. The main conclusion of the judgments is that assignment by the member states of radio frequencies such as those dealt with in these cases is not regarded as economic activities subject to VAT.

The judgments of the European Court of Justice are of significance to Denmark in that the Danish VAT legislation must be interpreted in accordance with the judgments. Thus Danish Licensees, including the winners of this auction, cannot claim deduction for VAT in the Licence Price.

5 Overview of the auction process

This section provides an overview of the auction process, including an indicative timetable for the completion of the Auction; rules on ownership; rules on Bidder behaviour; and rules on agreed penalties and other sanctions.

5.1 Stages of the auction process

The auction process consists of the following stages:

- the Application Stage;
- the Qualification Stage;
- the Auction (comprising four auction stages); and
- the Grant Stage.

5.1.1 The Application Stage

The Application Stage consists of a two-week period during which interested parties can submit their Applications and Deposits (in the form of a demand guarantee) to participate in the Auction. As part of its Application, each Bidder will be able to apply to be assigned an A lot together with a Coverage Area Group. Bidders who apply for an A lot can express their preferences for being assigned the coverage obligation in specific Coverage Area Groups through bids for the different groups ('Coverage Area Group Bids'). Details on the Applications received will be announced in the Application Stage and at the end of the Qualification Stage.

5.1.2 The Qualification Stage

In the Qualification Stage the Danish Energy Agency will check the Applications received and qualify the Bidders who meet the requirements to participate in the Auction. These requirements are set out in Section 6. The Qualification Stage is expected to last two days. The list of Qualified Bidders will be announced at the end of the Qualification Stage.

5.1.3 The Auction

The Auction has four stages. The duration of the Auction is unknown as it depends on the demand from Bidders and the number of rounds required in order to establish how

to assign the lots available among Bidders. The Auction process and the rules for the Auction are described in detail in Section 7.

First auction stage

The first auction stage will assign the A lots.

- If no Bidders have applied for an A lot, then no A lots will be assigned.
- If three or fewer Bidders have applied for an A lot, then each of these Bidders will be assigned one A lot at the reserve price of DKK 50 million.
- If more than three Bidders have applied for an A lot, a sealed bid process will be used to determine which three of these Bidders will be assigned one A lot.

Second auction stage

The second auction stage will assign a Coverage Area Group to each winner of an A lot. This will be done on the basis of the Coverage Area Group Bids submitted by the A lot winners with their applications.

At the end of the second auction stage the Danish Energy Agency will announce to Bidders:

- the number of A lots assigned (but not the identity of winners);
- the Coverage Area Groups assigned;
- the number of B lots available for the third auction stage; and
- the Coverage Area Groups where the coverage obligation for B lots will apply and for which exemption lots will be available in the third auction stage.

Third auction stage

The third auction stage will assign B lots and any exemption lots available. This stage will use an auction format allowing package bids and proceeding over several rounds

with ascending prices (CMRA¹⁸). The Auction is conducted via a web-based Electronic Auction System (EAS).

The third auction stage will proceed over a number of rounds in which Bidders can submit one or more bids subject to limitations arising from the round prices set by the Danish Energy Agency and from the activity rules. Bids are made for combinations of lots ('packages') with the guarantee that a Bidder will win only one of the packages for which it has made a bid, and that it will win all the lots included in the package of its winning bid. Bidders will be required to pay the bid amount of their winning bid.

Fourth auction stage

The fourth auction stage determines the actual frequencies that will be assigned to each winner of spectrum (A and/or B lots).

5.1.4 Grant Stage

In the Grant Stage, Bidders who have been assigned frequencies in the Auction will be granted the corresponding Licences, subject to payment of the full Licence price or 20% of this and provision of a guarantee for the deferred payment.

5.2 Time schedule

There is no pre-determined timetable for the auction process or the Auction in particular. However, in order to assist potential Bidders in their planning for the auction process, Table 3 below provides an indicative timeframe. The timetable, and any updates as required, will be published on the Danish Energy Agency's website: <http://www.ens.dk>.

The Danish Energy Agency reserves the right to alter any part of the auction process timetable, including the Application Date, at any time. In the event that a scheduled date is changed, the Danish Energy Agency will publish the new date on its website or otherwise advise Bidders as soon as possible. The Danish Energy Agency will make any changes to the schedule for a specific event at least 24 hours in advance of the previously scheduled time, except in extraordinary circumstances where the Danish Energy Agency may give less than 24 hours' notice.

¹⁸ Combinatorial Multi-Round Ascending.

Event	Bidder action	Action by the Danish Energy Agency	Indicative timeline
Application Stage			
Submission of Applications.	Interested parties submit Applications, including guarantee for Deposit.		16 August 2016
Notification of Bidders and announcement of Bidder list.		The Danish Energy Agency announces the identity of Bidders and information on their ownership structure.	19 August 2016
Notification on relations.	Deadline for Bidders to notify the Danish Energy Agency of any relations.		23 August 2016
Resolution of relations.	Deadline for Bidders to resolve any relations.	Bidders that fail to resolve relations will be excluded.	30 August 2016
Qualification Stage			
Final day for withdrawals.	Last date by which a Bidder may withdraw from the process.		1 September 2016, 13.00 hours
Announcement of Qualified Bidders.		The Danish Energy Agency announces list of Qualified Bidders.	2 September 2016
The Auction			
<i>First auction stage</i>			
Announcement of demand for A lots.		The Danish Energy Agency announces whether a bidding process is needed for assigning A lots (if more than three Bidders have requested allocation of an A lot).	2 September 2016
Bid submission deadline (if applicable).	Submission of bids for an A lot (if applicable).		6 September 2016
<i>Second auction stage</i>			
Announcement of first and second auction stage results.		The Danish Energy Agency announces the results of the first and second auction stages, including the availability of lots for the third auction stage and the Coverage Area Groups in which the coverage obligation on B lots may apply.	7 September 2016
<i>The third auction stage</i>			
Access to the EAS.		Danish Energy Agency distributes digital certificates and other material required to use the EAS.	7 September 2016 (user manuals and other relevant material are handed out at the bidder seminar)

Event	Bidder action	Action by the Danish Energy Agency	Indicative timeline
Bidder training.	Only qualified Bidders will be allowed to attend the seminar and participate in a mock auction.	The Danish Energy Agency and its Advisors will host a seminar on using the EAS and run a mock auction.	9-16 September 2016
First round of the third auction stage.	Bidders participate in the third auction stage and submit bids using the EAS.	The Danish Energy Agency sets parameters for the rounds, collects bids and processes the results of the round.	20 September 2016
Announcement of the results of the third auction stage.		The Danish Energy Agency announces the result of the third auction stage.	28 September 2016
The fourth auction stage			
The fourth auction stage.	Bidders who have been assigned spectrum lots may submit bids for their desired placement in the frequency band using the EAS (if required).	The Danish Energy Agency sets parameters for the fourth auction stage round, collects bids and calculates results.	30 September 2016
Publication of auction results.		The Danish Energy Agency publishes the results of the Auction.	30 September 2016
Grant Stage			
Payment of Licence Price.	Bidders who have been assigned spectrum pay 20% of the Licence Price and provide a demand guarantee for the Deferred Payment, or pay the Licence Price in full.		10 October 2016
Granting of Licences.		Licences granted to Winning Bidders that fulfil payment terms.	12 October 2016

Table 3: Indicative timetable for the auction process

5.3 Ownership rules

In connection with this auction, Bidders are subject to the ownership rules described below.¹⁹ Bidders are subject to ownership rules which require that the Bidder and its Connected Persons are not connected or associated with any other Bidder and its Connected Persons or more than one Mobile Operator.

Bidders should refer to the provisions of the Danish Energy Agency's Decision for the operation of ownership rules in this auction. Illustrative diagrams and a step-by-step

¹⁹ It is noted that the ownership rules are the same as in the 800 MHz auction. Only the rules regarding mobile operators, see Section 5.3.6, have been changed.

explanation of rules and the disclosure requirements as part of the Application are set out in Annex H. A summary of the rules is provided below.

5.3.1 Definition of Connected Persons and Associated Bidders

Connected Persons

Connected Persons in relation to a Bidder are effectively those parties who:

- control the Bidder;
- have a direct or indirect Participation of 10% or more in the Bidder and have an agreement, wholly or partly, to finance or otherwise to assist the Bidder in connection with the Auction or have Confidential Information concerning the Bidder; or
- are controlled by the Bidder or parties who fall into the previous two categories.

The full definition of a Connected Person is given in clause 99 of the Danish Energy Agency's Decision, cf. Annex C.

Associated Bidders

Where a Bidder and its Connected Persons do not overlap with another Bidder and its Connected Persons but there is nonetheless a degree of common ownership between the Bidders meeting the conditions below, such Bidders will be Associated Bidders.

Associated Bidders shall mean Bidders who have one of the following relationships to each other:

- one Bidder holds a Participation of 20% or more in the other Bidder,
- a Connected Person in relation to one Bidder holds a Participation of 20% or more in the other Bidder,
- a Person who is not a Connected Person in relation to any of the Bidders concerned holds a Participation of 20% or more in both Bidders; or
- one of the Bidders or a Connected Person in relation to this Bidder or a party who holds a Participation of 20% or more in this Bidder, and the other Bidder or a Connected Person in relation to the other Bidder or a party who holds a Participation of 20% or more in the other Bidder, each hold a Participation of 20% or more in the same Mobile Operator or Persons who control the Mobile Operator.

The definition of an Associated Bidder is given in clause 106 of the Danish Energy Agency's Decision, cf. Annex C.

5.3.2 Restrictions on relations between Bidders

The following relations must not exist between Bidders:

- one Bidder is a Connected Person with one or more other Bidders,
- two or more Bidders are Associated Bidders.

The rules are set out in clause 12 of the Danish Energy Agency's Decision, cf. Annex C.

The Danish Energy Agency's scope for granting exemptions from the above-mentioned rules is described in further detail in Section 5.3.4.

5.3.3 Resolution of Bidder connections

It is possible at the Application Date that a Bidder is unaware that another party with whom it has common Connected Persons or an association is applying.

If the Danish Energy Agency finds that the relation referred to in Section 5.3.2 exists between Bidders, the Danish Energy Agency shall notify this to the Bidders affected, indicating a deadline for Bidders to apply for exemption from the rules on relations between Bidders; bring the relation to an end; or refrain from further participation in the Auction.

If the Bidders affected are not granted an exemption, do not bring the relation to an end or refrain from participation in the Auction, the Danish Energy Agency will exclude the Bidders affected from further participation in the Auction. If the relation is brought to light later in the auction process, the Danish Energy Agency may also declare the result of the Auction not binding, wholly or partly, on the Danish Energy Agency.

If the above-mentioned relations exist between two Bidders, and it is not possible to bring the relation to an end within the deadline set by the Danish Energy Agency, and the Danish Energy Agency does not grant an exemption, one of the Bidders may withdraw from participation in the Auction, so that it is not necessary for the Danish Energy Agency to exclude both Bidders.

5.3.4 Exemption from ownership rules

The Danish Energy Agency may, at its sole discretion, grant exemption from the ownership rules described above, cf. clause 13 of the Danish Energy Agency's Decision, cf. Annex C. Furthermore, the Danish Energy Agency may attach terms to a decision about exemption from the ownership rules.

In considering whether to grant an exemption, the Danish Energy Agency will put emphasis on ensuring that restrictions on participation in the Auction should not extend further than what is necessary in order to ensure efficient use of spectrum, and at the same time the Danish Energy Agency must ensure that competition in utilising the spectrum is promoted in order to give users the greatest possible benefits.

In the case of a relation between two Bidders, the Danish Energy Agency may, under clause 13, grant exemption from the rules if it is substantiated to the Danish Energy Agency:

- that the connection or the association is temporary;
- that the Connection or the Association has not been established for the purpose of the Auction or the Licences,
- that none of the Bidders have determined, or may determine decisions in respect of another Bidder or its connected persons, so that the managements of the Bidders have made and will make decisions in respect of participation and bidding in connection with the Auction in relation to the application independently of each other,
- that none of the connected persons in relation to a Bidder has determined or can determine the decisions of the managements for and on behalf of two or more Bidders about participation and bidding in connection with the Auction, and
- that no Bidder or any of its connected persons have received or will receive confidential information concerning two or more Bidders.

5.3.5 Changes to ownership structures

It appears from clause 25 of the Danish Energy Agency's Decision that 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 being included under clause 12 of the Danish Energy Agency's Decision, cf. Annex C. In the absence of an exemption, failure to comply with this rule could result in a substantial fine and exclusion from the Auction (see Section 5.4.5 below).

In any event, as described in Section 6.1.7 below, the Bidder must notify the Danish Energy Agency of any changes whatsoever in the conditions on which its Application is based.

5.3.6 Mobile Operators

It follows from clause 9 of the Danish Energy Agency's Decision, cf. Annex C, that a Bidder may not be under the joint control of two or more Mobile Operators.

Notwithstanding clause 9 a Bidder may be under the joint control of two or more Mobile Operators if this is in accordance with the rules of the Competition Act as applicable from time to time. The Bidder in question is required itself to assess and vouch for compliance with these rules, cf. clause 10 of the Danish Energy Agency's Decision, cf. Annex C. This implies that the competition authorities need not assess this question prior to the Auction as has been the case for previous auctions. Instead the Bidder is required itself to assess and vouch for compliance with the competition rules, possibly with external assistance.

Notwithstanding clause 9 a Bidder may be under the joint control of two or more Mobile Operators if the Bidder has previously obtained approval under the rules of the Competition Act. In that case the Bidder must append documentation of such approval in its Application, cf. clause 11 of the Danish Energy Agency's Decision. This means that if a Bidder has previously obtained approval from the competition authorities regarding a specific case of cooperation or the like, then this approval will still apply, and documentation of it, for example by way of a decision, must in that case be appended to the Application for the Auction.

The rules laid down in the Danish Energy Agency's Decision do not imply that the Danish Energy Agency has taken a position on what Bidder constellations, including constellations other than the one mentioned about Bidders under the joint control of Mobile Operators, are subject to any competition regulation, and if so, to what extent. It is the duty of the Bidders to act in accordance with the relevant competition regulations. Any infringements of Danish and EU competition regulations are subject to the jurisdiction of the relevant competition authorities, i.e. the European Commission and/or the Danish competition authorities.

5.4 Rules on Bidder behaviour

This Section summarises the rules, set out in clauses 17-25 of the Danish Energy Agency's Decision, see Annex C, that govern the behaviour of Bidders prior to and after submission of Applications until the date on which the Licence(s) have been issued. The rules contain a general requirement that Bidders refrain from any action that could disturb the Auction as well as a number of specific rules in relation to collusion, restrictive practices and the behaviour of employees and legal entities that are related to the Bidder.

As part of the Application to take part in the Auction, each Bidder is required to confirm that the Bidder, its Connected Persons and its Insiders have complied and will comply with these rules. If at any point it becomes apparent that a Bidder, its Connected

Persons or its Insiders have failed to comply with these rules, the Bidder may be fined, excluded from the Auction and/or required to pay damages (cf. clause 80 of the Danish Energy Agency's Decision). In certain circumstances, the Danish Energy Agency may also revoke a successful Bidder's Licence if after the award it emerges that the Bidder, its Connected Persons or its Insiders breached these rules. The burden of proof is as defined from time to time under Danish law.

5.4.1 Definition of Confidential Information and Insiders

Confidential Information shall mean information of any nature, which, directly or indirectly, concerns a bid submitted by a Bidder or a bid that a Bidder considers submitting, and regardless of the media on which such information may exist, if such information – if made accessible to other parties – could affect the price that a Bidder would submit. Confidential information shall include any non-published information about a Bidder's strategy in connection with the Auction, including the bid that a Bidder is willing to submit, which may affect the Bidder's price or submission of a bid, and which may influence the Bidder's fulfilment of its bid, as well as information about financing the bid sum.

An Insider means a person who:

- has received Confidential Information about a Bidder, or
- has undertaken, wholly or partly, to finance or to assist a Bidder or its Connected Persons.

An Insider can be a Legal Entity or a natural person. Two or more Bidders can have common Insiders. In this situation, the Bidders shall take a number of special precautions, see Section 5.4.4 for more details.

5.4.2 Collusion and other disruption to the Auction

A Bidder, its Connected Persons and Insiders shall, until the issue of the Licences, refrain from:

- disclosing any Confidential Information to others, particularly Bidders and their Connected Persons,
- entering into agreements with other Bidders or their Connected Persons in relation to the Auction; and
- undertaking any action that may adversely affect the Auction prior to and after the Application is submitted, and until the date of issue of the Licence.

Mergers or takeovers that are not conducted on grounds of or in the interests of the Auction or the Licences shall not be deemed to constitute an act that could adversely affect the Auction.

A Bidder is allowed to disclose Confidential Information to other parties in certain situations, excluding any other Bidder and its Connected Persons, but the Bidder must take all reasonable measures to ensure that parties comply with the above provisions on disclosure and the provisions given in Section 5.4.3 below. See clauses 17 and 18 of the Danish Energy Agency's Decision.

Bidders should be aware that any disclosure of Confidential Information may have influence on the possibility to gain exemption from the ownership rules (see Section 5.3.4).

5.4.3 Restrictive agreements

There are three rules covering restrictive agreements as specified in clauses 19-21 of the Danish Energy Agency's Decision.

First, a Bidder, its Connected Persons and Insiders may neither prior to the submission of an Application, nor after the submission of an Application and until the date when the Licences have been issued, enter into any agreement with another Bidder or its Connected Persons regarding the Auction.

Secondly, a Bidder, its Connected Persons and Insiders shall prior to the submission of an Application, and after the submission of an Application and until the date when the Licences have been issued, refrain from any action that could have an adverse effect on the Auction.

Thirdly, a Bidder, its Connected Persons and Insiders may neither prior to nor during the Auction enter into any agreement or establish any understanding with a third party if the agreement or understanding directs this third party not to participate in the Auction, or restricts the ability of this third party to participate in the Auction.

5.4.4 Directors and employees, identifying obligations

Circumstances may arise where Bidders, their Connected Persons and their respective Insiders have common board members and/or employees. If this occurs, the Bidders concerned need to ensure as specified in clause 22 of the Danish Energy Agency's Decision that the respective Persons:

- are not involved in the submission of the Application, or bidding, for both Bidders or their Connected Persons; and

- are not in possession of, or obtain, any Confidential Information concerning both Bidders or their respective Connected Persons or Insiders.

A Bidder shall prior to the submission of its Application take all reasonable measures for the purpose of identifying its Connected Persons, Associated Persons and Insiders.

A Bidder shall also 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, so that the Bidder can take appropriate precautions to ensure that the rules on Confidential Information are not breached.

5.4.5 Penalties

The rules on penalties are set out in clauses 80-85 of the Danish Energy Agency's Decision, cf. Annex C.

In the event that an individual Bidder breaches the auction rules, the Bidder can either be fined but permitted to continue in the Auction, or be fined and excluded from the Auction, depending on the severity of the breach. If a Bidder is excluded from the Auction, all bids of the Bidder in question will be void. For the avoidance of doubt, there may be retrospective changes made to the process of the Auction up to that point so far as it affects other Bidders.

The Danish Energy Agency may impose a penalty of up to DKK 150 million if the Bidder violates the rules mentioned in clause 80.

In case the Danish State has sustained a greater loss as a result of the Bidder's breach of the rules, the Danish State may claim compensation under the general rules of Danish law.

The amount of the agreed penalty will be determined following a proportionality assessment that will take account of the nature of the breach and the potential or actual damage caused by the breach, including any impact on the Auction or mobile market.

Less severe infringements of the rules, such as a Bidder's failure to submit information in connection with an Application for the Auction, where the actual or potential harm seems limited may therefore result in a lower penalty.

However, a severe breach of the rules applicable to the Auction, such as collusion or intentional behaviour intended to unfairly distort competition or have an adverse effect on the Auction, will result in a higher penalty, possibly combined with exclusion from further participation in the Auction.

Generally, where infringements are caused not by the Bidder, but by its Insiders and Connected Persons, then the Danish Energy Agency has discretion to waive penalties

if it can be shown that the Bidder has taken all reasonable steps to avoid the infringement and that the infringement has not caused major detriment to the Auction, or to determine the size of the penalty with consideration hereof.

Events which may lead to exclusion from the Auction and/or imposition of an agreed penalty among others include the following:

- A Bidder has submitted false or misleading information to the Danish Energy Agency.
- A Bidder or any of its Connected Persons is colluding or attempting to collude with any other Person to distort the outcome of the Auction, or is acting in a way which is likely to distort the outcome of the Auction.
- The Bidder or any of its Connected Persons, or any Insider, discloses Confidential Information to others to an unnecessary extent.
- The Bidder or any of its Connected Persons is obtaining or attempting to obtain Confidential Information in relation to any other Bidder.
- Any board member or employee of a Bidder or its Connected Persons, who is also a board member or employee of another Bidder or its Connected Persons, is taking part in the preparation of both Bidders' participation in the Auction or is receiving Confidential Information relating to both Bidders and their Connected Persons.

Similarly, the Danish Energy Agency may impose a penalty on a Licensee of up to DKK 150 million if upon the issue of the Licence the Danish Energy Agency finds that the Licensee has violated the rules mentioned in clause 80 or the rule in clause 69 regarding demand guarantee for payment instalments.

6 Application procedure

Section 6 explains the Application and Qualification Stages, including information on Deposits and details on the Electronic Auction System (EAS) that will be used for the third and fourth auction stage.

6.1 Application Stage

This section describes the process and requirements for applying to participate in the Auction.

6.1.1 Bidders

A Bidder shall mean a Legal Entity which intends or considers submitting an Application for the Auction or which has submitted an Application for the Auction. This follows from clause 97 of the Danish Energy Agency's Decision, cf. Annex C.

Under clause 102 of the Danish Energy Agency's Decision, a Legal Entity means a public or private limited company, a partnership or the like.

There are no restrictions on the Bidder's country of domicile.

Application for the Auction may be submitted by any Legal Entity. However, there are rules on ownership structure that limit participation by certain Bidders, including that a Bidder cannot be under the joint control of two or more Mobile Operators. Reference is also made to Section 5.3.6.

6.1.2 Submission of Applications

In order to take part in the Auction, Bidders must submit an Application on paper between 10.00 and 15.00 hours (Danish time) on the Application Date. The Application Date will be announced on the Danish Energy Agency's website: <http://www.ens.dk>.

The Application shall be in writing, contained in an envelope or box marked "**Application for 1800 MHz Auction**".

The Application must be delivered to the address specified by the Danish Energy Agency. Unless otherwise specified on the Danish Energy Agency's website, the address will be the reception at the Danish Energy Agency's head office in Copenhagen:

Danish Energy Agency
Amaliegade 44
DK-1256 Copenhagen K

Bidders that submit an Application during the specified time window will get a receipt to acknowledge submission of the Application. Applications received before or after the specified time period or delivered to a wrong address will not be accepted.

A Bidder is only permitted to submit one Application. In the event that a Bidder submits more than one Application, only the last Application received from that Bidder during the specified time period will be taken into consideration. Any previous Applications will be returned.

6.1.3 Application content

The Application shall consist of the following documents:

- a completed and signed Application Form with associated documents, cf. Annex E.
- guarantee for Deposit; and
- a copy of a Bidder declaration prepared by the Danish Energy Agency, signed by one or more natural persons who are empowered to sign for the Bidder or who are otherwise authorised to bind the Bidder, cf. Annex G.

The Application shall be in Danish and be submitted in one original copy signed by the natural Persons who are empowered to sign for the Bidder or who are otherwise authorised to bind the Bidder. Two copies of the application shall be attached.

Bidders are also requested to supply a non-binding English translation (one paper copy only).

Furthermore, Bidders are requested to provide a USB key with PDF copies of all Danish and English documents submitted.

Application Form

The Bidder must complete the Application Form as set out in Annex E and provide the associated information and documents specified below. The Bidder should refer to the Application checklist to ensure that all of the required information for the Application has been provided.

The Application Form shall contain the following information and be accompanied by the following documents:

- The Bidder's name and an address in Denmark, telephone number and e-mail address where the Bidder may be contacted on weekdays between 09.00 and 17.00 hours (Danish time).
- Details and documentation of the names, positions and signatures of the natural Persons who are empowered to sign for the Bidder or who are otherwise authorised to bind the Bidder in any respect regarding the Application and the auction process as well as documentation of such power or authority.
- An exhaustive list of the names, positions and addresses of the Bidder's members of the board of management and board of directors or, in the absence of such, similar bodies,
- An exhaustive list of the Bidder's Insiders to the extent that the Bidder is aware of such Insiders.
- A detailed, clear and exhaustive outline of the ownership structure for the Bidder, to the extent that the Bidder is aware of such particulars and in accordance with instructions drawn up by the Danish Energy Agency, including:
 - a) a list of all Connected Persons and for each of them a statement to explain why the Person concerned is a Connected Person, and if the Person is a Mobile Operator, information to that effect; and
 - b) a list of Associated Persons and for each of them a statement to explain why the person concerned is an Associated Person, and whether the person is also an Associated Person in relation to another Bidder.

The outline does not have to state Persons that are Connected Persons in relation to a Bidder exclusively as a result of the control over such legal entities by a state.

- A summary of any agreement according to which one or more Persons have control over the Bidder to the extent that the Bidder is aware of such conditions.

- Evidence of any approval in accordance with clause 11 of the Danish Energy Agency's Decision.
- Whether the Bidder applies for an A lot, and any Coverage Area Group Bids (in whole DKK). An application for an A lot is regarded as a bid for an A lot at the stipulated reserve price. Coverage Area Group Bids shall specify for each Group the maximum amount that a Bidder would be prepared to pay for being assigned that specific Group. A Bidder is not required to specify amounts for one or more Coverage Area Groups or may specify an amount of DKK 0. If a Bidder does not specify a positive amount for a particular Coverage Area Group, the respective Coverage Area Group Bid for that Group is deemed to be zero. Any ties will be broken at random.

Further information about the rules on declaring information about ownership structure can be found in Annex H.

Deposit

As part of the Application a Bidder must provide security in the form of an irrevocable demand guarantee as Deposit in the Auction, cf. Section 6.3.

An example of a template for the demand guarantee can be found on the Danish Energy Agency's website.

The demand guarantee shall state the duration of the guarantee and that it is irrevocable as mentioned in the example of the template for the guarantee.

Bidder Declaration

Bidders are required to provide a solemn declaration as set out in Annex G, signed by the Bidder's representative(s) (as specified on the Application Form) as part of the Application.

The Bidder Declaration is submitted as a declaration by the Bidder that the Bidder will comply with the rules and terms of the Auction, and should minimise any doubt about the Bidder's ability to comply with the Licence terms after issue of the Licence.

6.1.4 Opening and initial review of Applications

After expiry of the deadline for Applications, the Danish Energy Agency will proceed to open all the Applications received. Applications that were not received at the specified address within the deadline will be rejected. The Danish Energy Agency will also undertake an initial review of the Applications in order to determine:

- the identity of all Bidders, their Insiders and their ownership structure; and
- whether the Applications are submitted in accordance with the specified rules and contain the correct information and documentation and that the documents are completed correctly without omissions.

If the Danish Energy Agency finds that the Application has not been completed correctly and accurately, the Agency will request the Bidder, within a time limit of four days, to correct the matter by supplementing, correcting or specifying the Application or annexes; providing relevant documentation or providing security for Deposit etc.

If the Bidder has not corrected the matter within the time limit of four days, the Danish Energy Agency will reject the Application or grant a further extension to correct the matter.

6.1.5 Publication of list of Bidders

Following the initial review of the Applications, the Danish Energy Agency will notify all Bidders of the identity of all other Bidders whose Applications have not been rejected and their ownership structure, and provide a date by which the Bidder must confirm the existence of, or absence of, any relations. Information about the Bidders and their ownership structure will also be published on the Danish Energy Agency's website. The published information will not contain a list of Insiders.

6.1.6 Notification and resolution of common ownership

Following the publication of the list of Bidders and their ownership structure, each Bidder is required to review this list and notify the Danish Energy Agency if they have a relation to another Bidder. The rules regarding relations are set out in clause 12 of the Danish Energy Agency's Decision, cf. Annex C, and are summarised in Section 5.3 above. The period for notification will be at least two business days from the day of publication of the list of Bidders.

In case there are such relations, each Bidder will be granted a deadline of at least five business days to resolve the situation by terminating the relation, or if one of the Bidders abstains from further participation in the Auction. Alternatively, Bidders may apply for an exemption from the ownership rules. The rules in regard to exemption are set out in clause 13 of the Danish Energy Agency's Decision and are summarised in Section 5.3.4 above. As part of this process, the Danish Energy Agency may require further information from the Bidders in addition to that provided in their Application.

Bidders that do not resolve the relations and do not receive an exemption will have their Application rejected.

6.1.7 Amendments and correction of Applications

The rules require Bidders to notify the Danish Energy Agency immediately of any changes in the factual information provided as part of their Application. In addition, up to the date of the issue of the Licence, a Bidder must notify the Danish Energy Agency immediately if it realises, at any point, that the information provided in its Application is inaccurate and/or incomplete. These notifications must also specify the name of the Bidder and should be signed by the Persons who are authorised or otherwise able to bind the Bidder.

A Bidder's failure to comply with this requirement may result in the imposition of a penalty and exclusion from the Auction.

Upon receiving such notifications, the Danish Energy Agency will assess or, as appropriate, re-assess whether or not the Bidder's Application can be accepted. If the Bidder's Application has already been accepted, the Danish Energy Agency will consider whether the information provided would lead to exclusion from further participation in the Auction. If this is the case, the Danish Energy Agency will inform the Bidder as soon as possible.

Notices from a Bidder to the Danish Energy Agency regarding submission of an Application for the auction process shall be sent by a letter marked "1800 MHz Auction" to: The Danish Energy Agency, Amaliegade 44, DK-1256 Copenhagen K, unless the Danish Energy Agency permits that the specific notice is sent in a different way.

Notices shall be in Danish and be accompanied by a non-binding English translation.

6.2 Qualification Stage

The Qualification Stage covers the period from the determination of Qualified Bidders through to the start of the Auction.

6.2.1 Last Day For Withdrawal

Following the resolution of any relations (if applicable), the Danish Energy Agency will notify each Bidder of whether it has qualified to participate in the Auction and of the last day on which qualified Bidders may withdraw their Application without being subject to a financial penalty. The Last Day For Withdrawal will be at least two working days after the deadline for resolution of any relations between the Bidders.

Bidders that withdraw on or before the Last Day For Withdrawal will not be subject to any penalties.

After this, Bidders cannot withdraw the Application. Bidders who have not applied for allocation of an A lot will be required to submit at least one valid bid in the first round of the third auction stage unless, by virtue of the ownership rules, they refrain or are

excluded from participating in the Auction, cf. clause 60 of the Danish Energy Agency's Decision. Any violation of this provision may involve a penalty.

6.2.2 Announcement of Qualified Bidders

After the Last Day For Withdrawal, the Danish Energy Agency will publish a list of all Qualified Bidders on its website. If there are no Qualified Bidders, the Auction will be cancelled.

6.2.3 Notification of bids in the first auction stage

If more than three Bidders have applied for allocation of an A lot, the Danish Energy Agency will notify Bidders that they must submit a sealed bid for an A lot. In the notification the Danish Energy Agency will specify the deadline for submission of this bid, which will be at least two business days after the announcement of Qualified Bidders.

6.2.4 Notification of bids in the third auction stage

After the second auction stage, the Danish Energy Agency will notify all Qualified Bidders to participate in the third auction stage. In the notification the Danish Energy Agency will specify a date and time for a Bidder seminar and a mock auction, which will take place shortly before the start of the third auction stage.

6.2.5 Procedure if there is only one Bidder

If there is only one Qualified Bidder, an auction is not necessary, and an alternative process will be used. In that case the Danish Energy Agency will:

- inform the Qualified Bidder that it is the only Qualified Bidder; and
- assign to the Bidder 2x30 MHz or less, if this is desired by the Bidder, including the full coverage obligation, at a Licence price corresponding to the reserve price for the assigned frequencies.

Thus, no spectrum will be assigned unless the Qualified Bidder is willing to fulfil the coverage obligation in all three Coverage Area Groups.

Any frequencies assigned to the Qualified Bidder will be placed at the bottom of the 1800 MHz band (i.e. immediately above Hi3G's existing frequencies, or, If the Qualified Bidder is Hi3G, as a contiguous frequency block of a size corresponding to Hi3G's Existing Licence plus the assigned spectrum starting at 1710.0/1805.0 MHz).

6.3 Deposit

6.3.1 Deposit, general

Bidders shall provide security in the form of an irrevocable demand guarantee for deposit. The deposit shall be DKK 150 million. The guarantee for Deposit cannot be withdrawn, and the Danish Energy Agency may draw down on the guarantee in order to cover penalties or compensation. Deposits in the form of a guarantee shall not accrue interest.

6.3.2 Release of Deposit

The guarantee is released by the Danish Energy Agency in accordance with the rules specified in clause 35 of the Danish Energy Agency's Decision, cf. Annex C.

The guarantee shall be released in the following cases:

- an Application is rejected;
- where a Bidder is notified that it will not be assigned a Licence (after the determination of winning bids); or
- where a Bidder is notified that it will be assigned a Licence (after the determination of winning bids), and the Bidder has paid the Licence Price in full or has paid 20% of the Licence Price and has provided a payment guarantee for the deferred payment.

6.4 The Electronic Auction System (EAS)

The third and fourth auction stages will be conducted using an Electronic Auction System (EAS). Bidders are required to submit their bids using the EAS.

The EAS will be accessible over the public internet through a standard web browser via an encrypted connection. No specialist software will be required. However, access to the EAS will be controlled by means of a Bidder-specific digital certificate and a password. This means that Bidders will need to install the digital certificates distributed in advance of the Auction on any computer that they may wish to use to access the EAS.

Details about the EAS, system requirements and the configuration of client terminals will be provided to Bidders after the Qualification Stage.

Bidders will be offered a Bidder seminar and participation in a mock auction. Bidders should participate in these in order to be able to use the EAS in the best possible way. The Danish Energy Agency will specify the dates for holding the Bidder seminar and mock auction after the second auction stage.

The Bidder seminar will offer general information to Bidders about the third and fourth auction stages and about the use of the EAS. At the Bidder seminar, Bidders will be provided with their authentication credentials for accessing the EAS and the user manual of the EAS.

Bidders should also participate in the mock auction, which will consist of running a mock auction of the third and fourth auction stage. Bidders will participate in the mock auction remotely, logging onto the EAS from their own premises using their authentication credentials. The mock auction provides an opportunity for Bidders to access the EAS prior to the start of the third auction stage. This is necessary to ensure that Bidders can successfully log onto the EAS using their own computers and that the authentication credentials provided can be used. The mock auction also allows Bidders to test their own facilities and procedures and get familiarised with the EAS.

7 The Auction

This section describes the rules for the Auction of the 1800 MHz band. The Auction consists of four stages:

- in the first auction stage, the A lots will be assigned (see Section 7.1);
- in the second auction stage, Bidders who have won an A lot will be assigned a specific Coverage Area Group (see Section 7.2);
- in the third auction stage, the B lots and any available exemption lots will be assigned (see Section 7.3); and
- in the fourth auction stage, specific frequencies will be awarded to the winners of A and/or B lots (see Section 7.4).

7.1 First auction stage

There are three A lots available in the Auction.

The Danish Energy Agency will calculate the demand for A lots from Bidders' Application Forms.

- If no Bidder has applied for an A lot in its Application Form, then no A lots will be assigned and the process moves to the third auction stage.
- If the demand for A lots is at least one but no more than three, then all Bidders who applied for an A lot in their Application Form will be assigned one A lot and will be liable for a first auction stage price of DKK 50 million.
- If the demand for A lots is greater than three, a sealed-bid process will be used to determine the winners of A lots, and each winner will be required to pay the highest losing bid.

If a sealed bid process is required:

- the Danish Energy Agency will announce the deadline for submission of bids for A lots, which will be no earlier than two business days after the announcement of qualified Bidders.
- each Bidder who has applied for an A lot will receive a bid form on which it can specify a bid amount for the A lot; in order to be valid, the amount must be in

whole thousands of DKK and must not be less than the reserve price of DKK 50 million. Bidders are not obliged to make a bid beyond the reserve price; Bidders who do not submit a bid or whose bid is invalid will be deemed to have made a bid at DKK 50 million;

- after the deadline for bid submission, the Danish Energy Agency will identify the winners of A lots, which will be those Bidders that submitted the three highest bid amounts. If there are any ties, these will be broken at random; and
- winners will be liable for a first auction stage price that is equal to the fourth highest amount.

7.2 Second auction stage

Each winner of an A lot will be assigned a different Coverage Area Group. The assignment Coverage Area Groups will be based on the Coverage Area Group Bids specified on the Application Forms.

The Coverage Area Groups will be assigned to winners by identifying the combination of Coverage Area Group Bids from all winners of A lots that maximises the sum of bid amounts, such that each winner is assigned exactly one Group and no Group is assigned more than once. If there are any ties, these will be broken at random.

Price determination

Second auction stage prices are determined using an opportunity-based pricing rule as follows:

For every winning Bidder, the second auction stage price is the difference between:

- the greatest possible total value that could be achieved by accepting Coverage Area Group Bids (such that each Bidder would be assigned exactly one Group and no Group would be assigned more than once) when setting the bid amounts in all the bids submitted by that winning Bidder to zero; and
- the total value of the original winning combination of Coverage Area Group Bids excluding the winning Bidder's winning bid amount.

This yields a unique price for each winner that is no more than its winning Coverage Area Group Bid. See the example below.

Assume that three Bidders each win an A lot and have submitted the following Coverage Area Group Bids:

Coverage Area Group	Bidder 1	Bidder 2	Bidder 3
Group 1	60	55	45
Group 2	0	50	20
Group 3	0	0	0

The winning bids are shown in bold: Bidder 1 wins Group 1, Bidder 2 wins Group 2 and Bidder 3 wins Group 3. The value of the winning combination is 110. Prices are determined as follows:

- Bidder 1: When setting Bidder 1's bid amount to zero, Bidder 2 still wins Group 2, and Bidder 3 wins Group 1 instead of Group 3. The value of the alternative winning combination of bids if Bidder 1's bid is set to zero is $50 + 45 = 95$. The value of the original winning combination of bids minus Bidder 1's bid amount is $110 - 60 = 50$. Bidder 1's price is therefore $95 - 50 = 45$.
- Bidder 2: When setting Bidder 2's bid amount to zero, Bidder 1 still wins Group 1 and Bidder 3 wins Group 2 instead of Group 3. The value of the alternative winning combination of bids if Bidder 2's bid is set to zero is $60 + 20 = 80$. The value of the original winning combination of bids minus Bidder 2's bid amount is $110 - 50 = 60$. Bidder 2's price is therefore $80 - 60 = 20$.
- Bidder 3 wins a Coverage Area Group for which it bid zero. Setting its bid amounts to zero does not affect the outcome so Bidder 3 does not have to pay a second auction stage price.

Example 2: Second auction stage price determination

Information at the end of the second auction stage

At the end of the second auction stage, the Danish Energy Agency will announce:

- to each individual Bidder who has applied for an A lot, whether it has won an A lot and, if so, its first auction stage price, the Coverage Area Group it has been assigned in the second auction stage and its second auction stage price; and
- to all Qualified Bidders, the number of A lots assigned in the first auction stage and the Coverage Area Groups that have been assigned in the second auction stage, as well as the number of B lots and the Coverage Area Group exemptions available for the third auction stage.

Following these announcements, the Danish Energy Agency will:

- schedule a date and time for the start of the third auction stage, which will be at least six business days from the date of the announcement;
- distribute information required for Bidders to access the EAS, including Bidder-specific digital certificates and passwords; and
- schedule a date and time for the Bidder seminars and mock auctions which will take place shortly before the start of the third auction stage.

Bidder seminars and mock auctions will be held separately for each individual Bidder.

7.3 The third auction stage

7.3.1 Overview

The third auction stage consists of one or more rounds. All bids submitted in the third auction stage are binding and will be taken into account in determining the winning bids of this stage, unless the bids are voided by the Danish Energy Agency in the case that a Bidder is excluded pursuant to the provisions in Sections 5.3 and 5.4.

In each round the Danish Energy Agency will set a round price for each lot category available (i.e. B lots and any exemption lot categories as applicable). Bidders are required to submit one bid for a combination of lots ('package') in each round at the prevailing round prices. These bids are called 'Headline Bids' and are relevant for the application of the activity rules. A Headline Bid may be for a package containing zero lots if the Bidder does not want to acquire any lots at the prevailing round prices.

Bidders are also allowed to make 'Additional Bids' for other packages along with their Headline Bids. The Bid Amounts for Additional Bids are set by the Bidders, but must not exceed the price of the corresponding package at the prevailing round prices and must satisfy the activity rules, which may further constrain the amount that the Bidder can bid for a package relative to the bid amounts of other bids submitted by the Bidder.

In broad terms, the third auction stage ends when it is possible to accept exactly one bid from each Bidder given the lots available and it is not possible to achieve a higher total value of bids by not accepting a bid from one or more Bidders. The requirement that the winning combination of Bids has to include exactly one bid from each Bidder ensures that a Bidder will not leave the auction empty handed unless it has (or is deemed to have) submitted a bid for zero lots (a zero bid). The combination of bids that achieves the highest value and includes one bid from each Bidder is the winning combination. Each Bidder will win the package of its winning bid and will be required to pay the amount of its winning bid.

7.3.2 Lots available

The lots available in the third auction stage are determined by the outcome of the first and second auction stage as set out in Section 2.3. The EAS will inform Bidders about the number of B lots and the exemption lot categories available.

7.3.3 Bids

A 'package' is a combination of lots, specified as a number of lots in each lot category.

A bid must specify:

- the package for which the bid is made, i.e. the package that the Bidder will be assigned if the bid is a winning bid; and
- the price that the Bidder will be required to pay if the bid is a winning bid.

Permissible packages

All bids must satisfy the spectrum cap set out in Section 1.3. The maximum number of B lots that a Bidder can include in a package depends on whether the Bidder has been assigned an A lot in the first auction stage.

Maximum spectrum that the Bidder may acquire	Maximum number of B lots if the Bidder has been assigned an A lot	Maximum number of B lots if the Bidder has not been assigned an A lot
2x30 MHz	4	6

Table 4: Maximum number of B lots that can be included in a package

The EAS will not allow Bidders to submit a bid for a package that includes more than the maximum number of B lots for which they can bid.

Exemption lots may be available in up to three categories (C1, C2 and C3), depending on the assignment of A lots and Coverage Area Groups in the first and second auction stages. For details on the availability of exemption lots, see Section 2.3.

If any exemption lot categories are included in the third auction stage, then:

- Bidders will only be permitted to include exemption lots in a package that also includes at least one B lot; and
- Bidders will be permitted to include at most one exemption lot for each available exemption category in any one package.

The EAS will not allow Bidders to submit bids that do not comply with these requirements, i.e. bids for packages that include exemption lots and no B lots, or for packages that include more than one exemption lot in any category.

Reserve prices

A bid cannot be lower than the sum of the reserve prices of the lots included in the package.

7.3.4 Round prices

For each round, the Danish Energy Agency will set a 'round price' for each lot category available. The round prices specify the price per lot in each lot category and determine the bids that a bidder may submit in the round, see details in Section 7.3.6. Round prices may increase from round to round in accordance with the provisions set out in Section 7.3.9.

In any given round, the round price of a package is the sum of round prices of all the lots included in the package.

7.3.5 Scheduling of rounds

The Danish Energy Agency will set the schedule and the round prices that will apply to each round.

The duration of each round is not expected to be less than 30 minutes or to exceed 2 hours.

The rounds will be scheduled to start between 09.00 and 17.00 hours on Danish business days. The Danish Energy Agency does not anticipate running more than 10 rounds in a single day.

The Danish Energy Agency will schedule rounds at least 15 minutes before the scheduled start of the round.

When a round is scheduled, the interface of the EAS of each Bidder will display:

- the scheduled start time of the round;
- the scheduled end time of the round;
- the scheduled duration of the round;
- the round prices;
- the Bidder's eligibility; and
- the number of extension rights still available for the Bidder, see Section 7.3.7.

7.3.6 Submission of bids

During a round, Bidders connected to the EAS will be provided with a bid form by the EAS interface. The bid form will show each Bidder the applicable round prices and the Bidder's eligibility for the round.

Bidders may only submit their bids using the bid form provided by the EAS interface.

Types of bids

There are two types of bids:

- 'Headline Bids'; and
- 'Additional Bids'.

A Headline Bid is a bid for a package with a bid amount equal to the round price of the package. Bidders can only specify the package for a Headline Bid, and the bid amount is then automatically determined as the round price of the package.

Additional Bids allow the Bidder to specify both the package and the bid amount subject to the restrictions set out in Section 7.3.8.

In each round, each Bidder may submit at most one Headline Bid, and may submit one or more Additional Bids. However, Bidders must not submit multiple bids for the same package in the same round.

Bidders are not required to submit Additional Bids – these are entirely optional.

Submission of Headline Bids

To submit a Headline Bid the Bidder must specify, in the relevant fields of the bid form, the package of the Headline Bid. The bid amount of the Headline Bid will then be automatically calculated by the EAS as the sum of round prices of all lots included in the package, and will be reported in the bid form.

A Bidder will only be able to submit a Headline Bid if it is eligible to do so under the activity rules, set out in Section 7.3.8.

If the Bidder does not submit a Headline Bid in a given round, then the Bidder will be deemed to have made a 'zero bid', which is a bid for a package of zero lots in each lot category²⁰ with a bid amount of zero.

If a Bidder submits, or is deemed to have submitted, a zero bid, then the Bidder's Headline Bid for any subsequent rounds will be the zero bid, in accordance with the activity rules set out in Section 7.3.8.

Submission of Additional Bids

To submit an Additional Bid the Bidder must specify, in the relevant fields of the bid form, the package and the bid amount.

Bidders may submit Additional Bids for any of their permissible packages (see Section 7.3.3). Bidders cannot submit Additional Bids for a package containing zero lots in each lot category.

The bid amount of an Additional Bid cannot be lower than the greater of:

- The reserve price of the package; and
- the bid amount of any bid for the same package that the Bidder may have submitted previously.

The bid amount of an Additional Bid cannot exceed the smaller of:

- the round price of the package; and
- any applicable relative cap on the bid amount arising from the activity rules set out in Section 7.3.8.

If a Bidder submits or is deemed to have submitted a zero bid, for any subsequent rounds the Bidder will still be able to submit Additional Bids in accordance with the activity rules set out in Section 7.3.8.

The bid submission process

The submission of bids through the EAS involves two steps:

²⁰ It is not possible to bid for exemption lots in a package not containing any frequency lots.

- In the first step, the Bidder should specify all the bids (Headline Bid and Additional Bids) it wishes to submit in the round using the bid form provided by the EAS, and submit the completed form to the EAS for checking.
- If all the bids in the bid form are valid, the Bidder will be presented with a summary of the bids and any applicable warnings. For example, the Bidder is warned if it is about to submit an Eligibility-Reducing Bid. The Bidder may then confirm this submission, or alternatively revert to the bid form to revise or amend its bids for that round. If one or more of the bids are invalid, the Bidder will automatically be returned to the bid form and will be required to revise or amend the bids to correct the errors.

Once a Bidder has confirmed its bid submission in a given round it will not be able to withdraw or modify its bids for that round. Upon confirmation of a bid submission, the EAS will show a summary of the bids submitted.

Bid submission will only be completed once the submitted bids have been confirmed by the Bidder before the end of the round (as scheduled, or as a result of an extension as set out in Section 7.3.7). Therefore, if a Bidder submits its bid form for checking, but fails to confirm its bid submission before the end of the round, the Bidder will be deemed not to have submitted any bids in this round, and its Headline Bid for that round (and for all subsequent rounds in accordance with the activity rules set out in Section 7.3.8) will be the zero bid.

7.3.7 Extension rights

An extension right provides a Bidder with an additional 30 minutes ('the extension period') to complete its bid submission if it has not done so before the scheduled end of the round.

Each Bidder will start the third auction stage with three extension rights.

If a Bidder has one or more extension rights remaining and fails to complete its bid submission in a round before the scheduled end of the round, then:

- an extension period will be automatically triggered for that Bidder; and
- the number of extension rights available to the Bidder for subsequent rounds will be reduced by one.

A Bidder who had an extension period triggered will be able to complete its bid submission during this period.

Bidders who fail to complete their bid submission in a round before the scheduled end of the round, but have no extension rights left, will not have an extension period triggered (regardless of whether an extension period is triggered for another Bidder) and thus will not be able to complete their bid submission after the scheduled end of the round.

If an extension period is triggered for any Bidder, the EAS will notify Bidders of the end time for the extension period. The Bidder who has triggered the extension period will be able to submit bids until the extension period ends. Other Bidders will only be able to see that the round has been extended, but will not be able to submit new bids or amend their existing bid. The extension period lasts at most 30 minutes, but may terminate earlier if all Bidders for whom an extension period has been triggered complete their respective bid submissions before the end of the extension period.

7.3.8 Activity Rules

Eligibility points

Each lot has a number of eligibility points. The eligibility points per lot are shown in Table 5.

Category	Eligibility points per lot
B	3
C1	1
C2	1
C3	1

Table 5: Eligibility points for the different lot categories

Package eligibility

The eligibility of a package is calculated as the sum of eligibility points of all lots included in the package. Therefore, the eligibility of a package with x B lots and y exemption lots is $3 \cdot x + y$.

Activity

The activity of a Bidder in a round is equal to the eligibility of the package of its Headline Bid in that round.

Bidder eligibility

A Bidder's Initial Eligibility is set with reference to the outcome of the first auction stage. It is calculated as:

- three times the number of B lots that the Bidder may acquire in the third auction stage (see Table 4) taking into account any A lots that the Bidder may have been assigned in the first auction stage; plus
- one eligibility point for each exemption lot category available.

The eligibility of a Bidder will be adjusted as bidding progresses with reference to the Bidder's activity. Specifically:

- in the first round, the Bidder's eligibility will be equal to its Initial Eligibility; and
- in all subsequent rounds, the Bidder's eligibility will be equal to the smaller of its eligibility and its activity in the preceding round.

Therefore:

- If in round r a Bidder makes a Headline Bid with activity smaller than the Bidder's eligibility, then the Bidder's eligibility will be reduced going forward; specifically, in this case the Bidder's eligibility in round $r+1$ will be set to its activity in round r .
- If in round r a Bidder makes a Headline Bid with activity greater than or equal to the Bidder's eligibility, then the Bidder's eligibility will be maintained for the following round; specifically, in this case the Bidder's eligibility in round $r+1$ will be set to its eligibility in round r .

See the example below.

Suppose that no A lots have been assigned and thus all three exemption categories are available. Consider a Bidder who has an Initial Eligibility of 21.

The Bidder's eligibility in the first round is 21. The packages selected by the Bidder for its Headline Bid in the rounds in question are as shown in the table below. This implies that the Bidder's activity and eligibility are as shown in the table.

<i>Round</i>	<i>B</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>Activity</i>	<i>Eligibility</i>
1	4	1	1	1	15	21
2	4	1	1	1	15	15
3	3	1	1	1	12	15
4	3	1	1	1	12	12
5	4	1	1	0	14	12
6	3	1	1	1	12	12

In the first round the Bidder's activity is 15, which is smaller than the Bidder's initial eligibility. Therefore, its eligibility for the subsequent round will be reduced to 15.

In the second round, the Bidder's activity is the same as its eligibility, so its eligibility for round 3 is maintained at 15.

In round 3 the Bidder makes another Headline Bid with activity below its eligibility in that round. This means that the eligibility of the Bidder in round 4 will fall to its round 3 activity, i.e. 12.

In round 5 the Bidder makes a Headline Bid for a package with eligibility greater than the Bidder's eligibility in the round in accordance with the activity rules set out below. This does not increase the Bidder's eligibility for round 6, which is the smaller of the Bidder's eligibility in round 5 and its activity in round 5. Therefore, the Bidder's eligibility in round 6 remains at 12.

Example 3: Reduction of Bidder eligibility

The rules for reductions to Bidder eligibility have the following implications:

- a Bidder's eligibility cannot increase as the Auction progresses; and
- once a Bidder submits a zero bid (or is deemed to have submitted a zero bid), its eligibility for all subsequent rounds will be zero.

We call a Headline Bid with activity smaller than the Bidder's eligibility at the start of the round an 'Eligibility-Reducing Bid'. Eligibility-Reducing Bids create constraints for the Bidder in subsequent rounds as explained below.

Constraints arising from a Bidder's Initial Eligibility

Bidders are not allowed to bid for packages with eligibility greater than their Initial Eligibility.

Constraints arising from Eligibility-Reducing Bids

Eligibility-Reducing Bids create 'relative caps', which constrain the bid amount of bids that the Bidder can make for packages with eligibility greater than the eligibility of the

package of the Eligibility-Reducing Bid, but not greater than the Bidder's eligibility in the round in which the Bidder submitted that Eligibility-Reducing Bid.

Specifically, the bid amount of any bid that is subject to the cap cannot exceed:

- the highest bid amount that the Bidder has bid for the package of the Eligibility-Reducing Bid (including bids submitted in previous rounds and any bids that the Bidder may make in the current round for this package); plus
- the difference in the round prices of the package of the bid subject to the constraint and the package of the Eligibility-Reducing Bid, in the round in which the Eligibility-Reducing Bid was submitted.

Thus, suppose that in round r a Bidder has eligibility n and submits an Eligibility-Reducing Bid for package X , with eligibility m . This will create a relative cap on any bid that the Bidder may submit for packages whose eligibility is greater than m but not greater than n . Suppose that package Y is one of these packages. From round $r+1$ onwards, the bid amount of any bid that the Bidder makes for package Y is constrained by the relative cap. When calculating the value of the relative cap on Y we call Y the 'constrained package', X the 'constraining package' and r the 'constraining round'.²¹ The relative cap means that the amount of the bid for the constrained package (Y) cannot exceed the sum of the highest bid made by the Bidder for the constraining package (X) plus the difference in the price of Y and X in round r . See the example below.

²¹ This terminology is used to simplify the explanation of how the cap is calculated, despite the fact that packages or rounds are not themselves constrained. It is only the bid amount that the Bidder can make for certain packages after the round in which the Bidder reduced its eligibility that is constrained.

Suppose that prices for the individual lot categories in round 10 are as shown below, and that a Bidder with eligibility 15 submits the Headline Bid shown in the table.

	B	C1	C2	C3	Amount	Activity
Price	30	15	15	15		-
Headline Bid	3	1	1	1	135	12

The Headline Bid submitted in round 10 is an Eligibility-Reducing Bid.

Now suppose that in a later round the Bidder wants to submit a bid for a package of four B lots, C1 and C2, which has an eligibility of 14. The relative cap on the bid amount that the Bidder can submit for this package is calculated as:

- the highest bid submitted by the Bidder for the constraining package (i.e. 3B, C1, C2 and C3) - this would be 135 if the Bidder had not made any further bids for this package, or higher if the Bidder had bid for this package in later rounds; plus
- the price of the constrained package in round 10 ($4 \times 30 + 15 + 15 = 150$); minus
- the price of the constraining package in round 10, i.e. the bid amount of the Eligibility-Reducing Bid (135).

Hence, if the Bidder has not made any further bid on the constraining package, the amount it can bid for the package of four B lots, C1 and C2 is capped at 150. If the Bidder had increased its bid for the constraining package by 10 (so that the highest bid submitted by this Bidder for the constraining package is 145), the cap on the package of four B lots, C1 and C2 would increase by the same amount (so would be 160), and so on. The cap is relative to the highest bid amount bid for the constraining package.

Example 4: Relative cap

The cap is relative in that it constrains the bid amount that the Bidder can submit for the constrained package relative to the highest bid that the Bidder submits for the constraining package. This means that the Bidder may be able to increase its bid for a package subject to a relative cap if it can (and does) increase the bid for the constraining package.

Activity rules for the submission of Headline Bids

A Bidder with zero eligibility will not be able actively to submit a Headline Bid - the zero bid will be automatically submitted by the EAS on behalf of the Bidder.

A Bidder with eligibility greater than zero may submit a Headline Bid for:

- any permissible package with eligibility not greater than the Bidder's eligibility in the round; or
- any permissible package with eligibility greater than the Bidder's eligibility in the round (but not greater than the Bidder's initial eligibility), provided that the bid amount (calculated automatically as the sum of round prices of lots in the package) does not breach the relative cap that applies to this package.

Where relevant, the Bidder may be able to submit Additional Bids alongside its Headline Bid in order to ensure compliance of the Headline Bid with the relative cap,

subject to such bids being permitted under the activity rules for the submission of Additional Bids. See the example below.

Suppose that the round prices and Headline Bids submitted by a Bidder in rounds 3, 4 and 5 are as shown below. Suppose also that the Bidder has not placed any Additional Bids:

Round	Eligibility	Prices				Headline Bid		Activity
		B	C1	C2	C3	Package	Amount	
3	15	30	15	15	15	3B, C1, C2, C3	135	12
4	12	35	15	15	15	3B, C1, C2, C3	150	12
5	12	35	15	15	25	4B, C1, C2	170	14

The Bidder has reduced eligibility in round 3, but in round 5 wishes to bid on the package of four B lots, C1 and C2, which has greater eligibility. This is a constrained package, and any bid is subject to a relative cap with the constraining package being that of the Headline Bid in round 3.

Without submitting any Additional Bids in round 5, the relative cap for this constrained package is:

- the highest bid for the constraining package (150, placed in round 4); plus
- the price of the constrained package in round 3 ($4 \times 30 + 15 + 15 = 150$); minus
- the price of the constraining package (i.e. the bid amount of the Headline Bid) in round 3 (135).

This is 165 so the Bidder would not be allowed to bid for the constrained package in round 5 (as the price for this would be 170).

However, the Bidder could submit an Additional Bid for the constraining package (round 3 package) in order to increase the relative cap. For example, the Bidder could submit an Additional Bid for this package in round 5 with an amount of 155 (which is allowed as it does not exceed the price of the package in the round and there is no relative cap on this bid). This would increase the relative cap by 5 and the Bidder could therefore submit a Headline Bid for four B lots, C1 and C2 at 170.

Example 5: Activity rules for Headline Bids

Activity rules for the submission of Additional Bids

A Bidder may submit Additional Bids for any permissible packages with eligibility no greater than the Bidder’s initial eligibility (other than for the package with zero lots in each lot category). However, the maximum bid amount that the Bidder can specify for an Additional Bid is subject to the following constraints:

- the bid amount of an Additional Bid cannot exceed the round price of the package²²; and

²² Note that a Bidder may wish to bid for more than one package at round prices in any given round and may be able to do so. However, only one of these bids can be made as a Headline Bid. The selection of the Headline Bid may be relevant for the application of the activity rules, as the Headline Bid determines the Bidder’s activity and thus its eligibility going forward, and will be relevant for the calculation of relative caps if the Headline Bid is an Eligibility-Reducing Bid.

- the bid amount of an Additional Bid for a package with eligibility greater than the Bidder's eligibility in the round must satisfy the relative cap.

Where relevant, the Bidder may be able to submit further Additional Bids in order to ensure compliance of the Additional Bid that the Bidder wants to submit with the relative cap, subject to such bids being permitted under the activity rules for submission of Additional Bids. See the example below.

Suppose that Headline Bids are as in the previous Example 5.

In order to submit the Headline Bid in round 5, the Bidder has also submitted an Additional Bid for the constraining package (3B, C1, C2, C3) at 155.

Now suppose in round 5 the Bidder would like to submit another Additional Bid for a package consisting of five B lots without any exemptions. The bid amount for this Additional Bid cannot exceed the package price at round 5 prices ($5 \times 35 = 175$). Additionally, this package has an eligibility of 15, more than the Bidder's current eligibility of 12. The package is therefore subject to a relative cap with respect to the last round in which the Bidder had sufficient eligibility to bid on this package (round 3). The relative cap is determined as follows:

- the highest bid for the constraining package (155 from the Additional Bid the Bidder needs to submit in round 5 to enable the desired Headline Bid); plus
- the price of the constrained package in round 3 ($5 \times 30 = 150$); minus
- the price of the constraining package in round 3 (135).

The relative cap for the Additional Bid for five B lots with no exemptions is 170. The bid amount for the Additional Bid can therefore be any amount that is at least the reserve price of the package and at most 170. If the Bidder wants to make a higher bid for the five B lots (up to the round price of 175), it would have to increase the Additional Bid on the constraining package (which can be raised up to 160).

Example 6: Activity rules for Additional Bids

Managing relative caps and activity rules

The EAS will check compliance with the activity rules and all relative caps. The EAS will identify violations of the relative cap rule and provide Bidders with information that will help them to remedy such violations.

7.3.9 Evaluation of bids and closing of the third auction stage

After each round, the Danish Energy Agency will evaluate bids in order to determine whether the third auction stage can close or whether a further round is required. If a further round is required, the Danish Energy Agency will also determine for which lot categories round prices need to increase.

Figure 4 provides an overview of the process for evaluating bids.

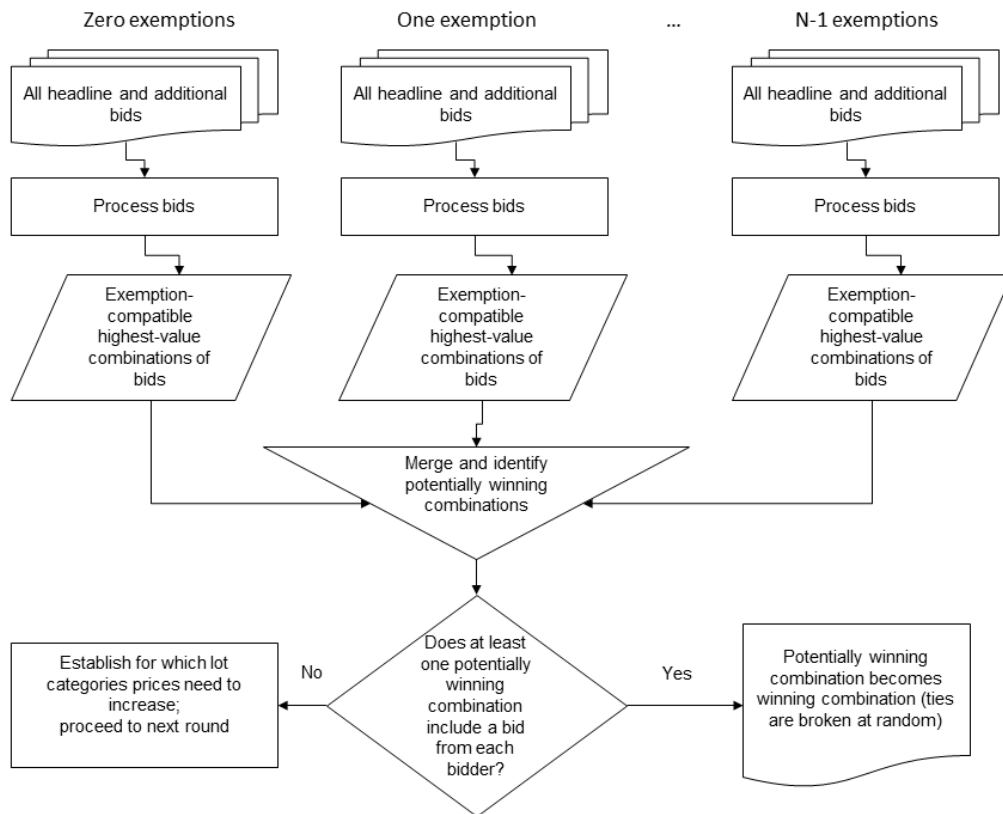


Figure 4: Process for evaluating bids and checking for the closing condition

Evaluation of bids

When evaluating bids we proceed through the following steps:

In the **first step**, we examine a number of hypothetical scenarios in which we assume that the supply of exemption lots is fixed rather than determined by the number of winners of B lots minus one (as described in Section 2.2), ranging between a supply of zero exemption lots in each category to the maximum possible supply (that is if all bidders win spectrum). Therefore we consider the following scenarios:

- no exemption lots available in any exemption lot categories;
- one exemption lot available in each exemption lot category;
- two exemption lots available in each exemption lot category;

and so forth, up to

- the scenario in which the number of exemption lots available in each exemption lot category is one less than the number of Bidders that participate in the Auction.²³

For each of these scenarios, we identify the potential combinations of bids that would produce the highest total value of bids and that would be feasible given the available number of B lots and the supply of exemption lots specified for the scenario.

Specifically, we establish the feasible combination(s) of bids that have the highest total value, where:

- a 'feasible combination of bids' for the particular scenario is a selection of bids from all the valid Headline and Additional Bids (including zero bids for Bidders who have, or are deemed to have, submitted a zero bid), where
 - the combination of bids includes at most one bid from each Bidder; and
 - the demand expressed in the packages of the selected bids can be met with the lots available in the scenario.
- the 'value' of a feasible combination of bids is the sum of the bid amounts of bids included in that feasible combination, plus the sum of reserve prices for any lots that will not be assigned via the bids in that feasible combination; and thus
- a 'highest-value combination of bids' is a combination of bids that achieves the maximum value across all feasible combinations of bids in the scenario.²⁴

The number of exemption lots actually available in each exemption lot category is determined as the number of winners of B lots minus one. If there are no winners of B lots, the number of exemption lots available in each exemption lot category is zero.

It is then examined whether the number of winners of B lots included in the highest-value combination(s) of bids in a specific hypothetical scenario would generate at least the same number of exemption lots as is assumed to be available in the respective scenario. Highest-value combinations of bids that meet this requirement are called 'exemption-compatible'.

²³ If no exemption lots are offered in the third auction stage, then there is only one scenario, as the supply of exemption lots is always zero.

²⁴ Note that a scenario may have multiple combinations of bids that give the same value, and thus multiple combinations of bids may have the highest total value.

The reason for following this process - in which the highest-value bid combinations in hypothetical scenarios where the number of exemption lots is set independently of the number of winners of B lots are first identified, followed by an examination of whether these bid combinations are exemption-compatible - is to ensure that the assignment of exemption lots reflects the Bidders' willingness to pay for exemption lots. Alternatively, Bidders who bid for packages that include exemption lots and also for packages that do not include exemption lots would be at a disadvantage with respect to expressing their willingness to pay for exemption lots relative to those Bidders who only bid for packages that include exemption lots.

A highest-value combination of bids (*C*) in a hypothetical scenario where the number of exemption lots available in each exemption lot category is assumed to be *N*, is exemption-compatible if:

- *N* is zero; or
- *N* is greater than zero and the number of bids which are non-zero bids included in *C* is at least $N+1$.

For example: In the scenario in which we assume that one exemption lot is available in each exemption lot category, a feasible combination of bids is only exemption-compatible if it includes at least two bids that are not zero bids.

Note that when there are multiple highest-value combinations of bids for a given scenario, the number of non-zero bids included in the combination can vary across these combinations. The assessment should therefore be made for each of the highest-value combination of bids in turn.

Also note that any feasible combination of bids in the zero-exemptions scenario is always exemption-compatible.²⁵

Example 7 illustrates this first step.

²⁵ This is because the actual number of exemption lots available (determined by the number of winners of B lots) in any feasible combination is at least zero, even if the combination only contains zero bids.

Suppose that no A lots have been assigned. Thus there are 13 B lots and all three exemption lot categories (C1, C2 and C3) available.

Three Bidders are participating in the third auction stage. Therefore, we consider three hypothetical scenarios where the available number of exemption lots in each exemption lot category is zero, one and two respectively.

In the current round, prices are 30 for B lots and 50 for each exemption lot category. All prices and amounts are in DKK million.

Bids in the current round are as follows:

Bidder	Bid type	Package				Amount
		B	C1	C2	C3	
1	Headline Bid	4	1	1	1	270
	Additional Bid	4	0	0	0	105
2	Headline Bid	5	1	1	1	300
	Additional Bid	5	0	0	0	130
3	Headline Bid	5	1	1	1	300
	Additional Bid	4	1	1	1	105

Bidders have not made bids for any other packages in previous rounds, so we only need to consider the bids submitted in this round for evaluation.

With zero exemptions in each exemption lot category:

- There is a single highest-value combination of bids, which includes Bidder 1's and Bidder 2's Additional Bids.
- The value of this combination is 235 plus the reserve price of 4 unsold lots, i.e. 335 in total.
- The combination of bids is exemption-compatible (by definition any feasible combination with zero exemptions is exemption-compatible).

With one exemption in each exemption lot category:

- There are three highest-value combinations of bids: the first one includes Bidder 3's Headline Bid and Bidder 2's Additional Bid; the second one includes Bidder 2's Headline Bid and Bidder 1's Additional Bid and the third one includes Bidder 3's Headline Bid and Bidder 1's Additional Bid.
- The value of these bid combinations is either 430 plus the reserve price of 3 unsold lots or 405 plus the reserve price of 4 unsold lots, i.e. 505 in total in both cases.
- The three bid combinations are exemption-compatible, each combination including two bids that are not zero bids.

With two exemptions in each exemption lot category:

- There is a single combination of bids that has the highest total value, which includes Bidder 2's and Bidder 3's Headline Bids.
- The value of this combination is 600 plus the reserve price of 3 unsold lots, i.e. 675 in total.
- This combination of bids is not exemption-compatible, as it includes only two bids that are not zero bids, so the requirement that at least three bids should be non-zero bids is not met.

Example 7: Evaluation of bids in different hypothetical scenarios

In the following steps only the highest-value combinations of bids that are exemption-compatible are evaluated.

In the **second step** the 'potentially winning combination(s) of bids' are identified. From the combinations identified in the first step (i.e. the highest-value combinations of bids

from each hypothetical scenario that are exemption-compatible), we select the combinations that achieve the highest value across all the hypothetical scenarios. Example 8 illustrates this step.

Based on example 7 above we evaluate the highest-value combinations of bids.

No.	Scenario	Bids included						Value	Exemption-compatible?
		Bidder	B	C1	C2	C3	Amount		
1	Zero exemptions	1	4	0	0	0	105	335	Yes
		2	5	0	0	0	130		
2a	One exemption	2	5	0	0	0	130	505	Yes
		3	5	1	1	1	300		
2b	One exemption	1	4	0	0	0	105	505	Yes
		2	5	1	1	1	300		
2c	One exemption	1	4	0	0	0	105	505	Yes
		3	5	1	1	1	300		
3	Two exemptions	2	5	1	1	1	300	675	No
		3	5	1	1	1	300		

Only combinations 1, 2a, 2b and 2c are exemption-compatible and taken into consideration. Among these, combinations 2a, 2b and 2c achieve the highest total value across all the hypothetical scenarios.

Example 8: Evaluation of bids across scenarios

In the **third step** it is established whether one or more of the potentially winning combinations of bids include exactly one bid from each Bidder (which may be the zero bid for Bidders who have, or are deemed to have, submitted a zero bid). If there are one or more such combinations of bids, the third auction stage ends. Otherwise, a further round is needed. Example 9 illustrates this step.

Following from example 8 above, there are now three potentially winning combinations of bids. As neither of these includes exactly one bid from each Bidder, the third auction stage does not close and a further round is needed.

Now suppose that Bidder 3's Additional Bid had been higher, say at the maximum possible bid amount of 270. In this case there would be a further highest-value combination of bids in the scenario with two exemptions in each category with a value of 675 consisting of Bidder 2's Headline Bid, Bidder 1's Additional Bid and Bidder 3's Additional Bid. This combination would be exemption-compatible as it includes three non-zero bids.²⁶ This combination would therefore be considered, and would be selected as the single potentially winning combination of bids given that its value of 675 would be the highest. This combination would include exactly one bid from each Bidder, so the third auction stage would close.

Example 9: The closing condition

If there is only one potentially winning combination of bids that includes exactly one bid from each Bidder, then this will become the winning combination. If there are multiple potentially winning combinations of bids that include exactly one bid from each Bidder, the winning combination of bids will be selected on the basis of the following rules:

1. The combination(s) of bids in which the greatest number of B lots would be assigned.
2. If there are multiple combinations of bids that meet the condition above, amongst these the combination(s) of bids that contain the greatest number of non-zero bids are selected.
3. If there are multiple combinations of bids that meet the first and second conditions, amongst these the winning combination(s) of bids in which the the greatest number of exemption lots would be assigned are selected.
4. If there are multiple combinations of bids that meet the first, second and third conditions, one combination amongst these are selected at random.

The winning bids are those included in the winning combination of bids. Each winning Bidder is assigned the package of its winning bid and will be required to pay the amount of its winning bid.

The closing condition for the third auction stage has the following implications:

- exactly one third auction stage bid will be accepted from each Bidder, and therefore the Auction will not end with a Bidder not winning any lots unless the Bidder has submitted (or is deemed to have submitted) a zero bid;

²⁶ Note that in this case there would also be a further highest-value combination of bids in the scenario with one exemption lot in each category, including the Additional Bids from all three Bidders.

- the third auction stage can close in a round even if it is not possible to accommodate all the Headline Bids submitted in the round with the lots available, provided that one or more Bidders have made Additional Bids for packages with fewer lots that could be selected in the winning combination of bids instead of their Headline Bid; and
- conversely, the third auction stage may continue even if it is possible to accommodate all the Headline Bids submitted in the round with the lots or exemption lots available, if none of the potentially winning combinations of bids includes exactly one bid from every Bidder (as some of the Bidders who have submitted a non-zero Headline Bid in the round may still be outbid by Additional Bids or previous Headline Bids from Bidders who have submitted a zero bid).

If the condition for closing the third auction stage is not met, a further round is required and round prices for some lot categories need to increase. The objectives of increasing prices are to:

- enable those Bidders that would not win in at least some of the potentially winning combinations of bids to express higher willingness to pay for their desired packages; and/or
- provide signals for Bidders to reduce demand.

In order to apply price increments, we first identify the Bidders who do not have a bid included in each of the potentially winning combinations of bids. These Bidders are designated 'omitted Bidders'.

We then consider all the omitted Bidders in turn and examine why the Bidder would not have won with its Headline Bid (as round prices determined the bid amount of this bid).

In some cases the Headline Bid cannot be accepted because this would result in excess demand in a specific lot category (for example, the number of B lots may be too high in relation to the supply, but not the number of exemption lots). In this case, it will only be necessary to increase the price for the lot categories that cause the Headline Bid to clash with other bids (i.e. the price of B lots in the example).

However, it is also possible that the Headline Bid cannot be accepted because of the combination of different lot categories in the package. If so, it is not sufficient to consider excess demand in individual lot categories in order to identify which lot categories require an increase in round prices. In this case it will be necessary to increase the price for multiple lot categories. The example below illustrates this.

No A lots have been assigned, and two Bidders compete for 13 B lots and the available exemption lots in the various Coverage Area Groups. As the Bidders may bid at most for 6 B lots, there will never be excess demand for B lots.

Suppose that current round prices are DKK 25 million for B lots and DKK 10 million for each exemption lot category. Each Bidder is willing to undertake the Coverage Obligation in one of three Coverage Area Groups at the stipulated round prices, but none of the Bidders prefer a specific group rather than the others. Each Bidder therefore submits bids at round prices for all the packages that include the highest permissible number of B lots (i.e. 6 B lots) and all the various feasible combinations for two out of the three exemption lot categories, as shown below:

	Bid	B (DKK 25 million)	C1 (DKK 10 million)	C2 (DKK 10 million)	C3 (DKK 10 million)	Amount (DKK million)
Bidder 1	Headline Bid	6	1	1	0	170
	Additional Bid 1	6	1	0	1	170
	Additional Bid 2	6	0	1	1	170
Bidder 2	Headline Bid	6	1	1	0	170
	Additional Bid 1	6	1	0	1	170
	Additional Bid 2	6	0	1	1	170

It is not possible to accept any of the bids, as all combinations of bids would require one more exemption than would be available in at least one of the Coverage Area Groups. However, if each individual category is considered individually, there will be no surplus demand. The demand for B lots never exceeds the supply of B lots. If a Bidder only wanted an exemption lot, this might always be accommodated as the other Bidder is willing to undertake the coverage obligation in one Coverage Area Group. However, the fact that Bidder 1 asks for both C1 and C2 in its Headline Bid means that the bid cannot be accepted together with any of Bidder 2's bids, and vice versa.

Example 10: Identification of lot categories that require a price increment

Specifically, the lot categories for which round prices need to be increased can be identified by going through the following steps:

- One of the the omitted Bidders is considered.
- Taking the Headline Bid from this Bidder in the most recent round, the lot categories for which the number of lots in the bid's package is greater than zero are examined.
- Taking each of these categories in turn, a hypothetical bid for a package that includes only the lots in this category that are included in the Headline

Bid and no other lots are constructed (the bid amount is adjusted accordingly).²⁷

- Bids are then re-evaluated by replacing the Headline Bid from the Bidder under consideration with this hypothetical bid.²⁸ If under this re-evaluation the Bidder would still be an omitted Bidder, the price of the lot category under consideration needs to increase.
- If none of the lot categories considered for this Headline Bid has been found to require a price increment when considered individually, a hypothetical bid for a package that includes all the exemption lots in the Headline Bid, but no B lots is constructed.²⁹
- The bids are then re-evaluated by replacing the Headline Bid from the Bidder under consideration with this hypothetical bid. If under this re-evaluation the Bidder who submitted the corresponding Headline Bid would still be an omitted Bidder, the price of all exemption lot categories included in the Headline Bid needs to increase.
- If, for the Headline Bid under consideration, none of the lot categories has been identified in the process above, then the price of all the lot categories included in the Headline Bid needs to increase,
- The same process is repeated for the other omitted Bidders.
- The process terminates once all omitted Bidders have been considered, or earlier if it has been established that a price increment is required for all lot categories.

The Danish Energy Agency will determine the level of price increments with a view to supporting price discovery and promoting an efficient auction outcome.

²⁷ Note that this hypothetical bid may contain a positive number of exemption lots but no B lots, and that consequently the Bidder would not in practice have been able to submit this bid.

²⁸ Hypothetical bids that only include exemption lots but no B lots are not regarded as zero bids when checking, in this context, for exemption-compatibility. Hence the bid contributes to the number of exemption lots available.

²⁹ Note that in practice Bidders would not be allowed to submit this hypothetical bid during the auction.

Suppose there are nine B lots and one exemption lot category (C1) available.

The following bids are submitted during a round in which prices for B lots and C1 lots are 25 and 30 respectively.

Bidder	Bid type	Package		Amount
		B lots	C1	
1	Headline Bid	4	1	130
2	Headline Bid	4	1	130
3	Headline Bid	5	1	155

The only potentially winning combination of bids is one in which no bids are selected. This is because all bids submitted include an exemption lot. This means that there are no feasible combinations in the hypothetical scenario where zero exemptions are available. At the same time, none of the feasible combinations in any other hypothetical scenario is exemption-compatible. The only potentially winning combination of bids is therefore a combination that does not assign any lots, and in this combination all three Bidders are omitted.

Looking at Bidder 1:

- We construct a hypothetical Headline Bid for a package including the four B lots but not the C1 exemption lot. The corresponding bid amount is 100. When bids are re-evaluated, the potentially winning combination of bids includes Bidder 1's and Bidder 3's Headline Bids – Bidder 1 is no longer an omitted Bidder. Therefore, the price of B lots does not need to increase at this point;
- We construct a hypothetical Headline Bid for a package including the C1 exemption lot but not any B lots. The corresponding bid amount is 30. When bids are re-evaluated, the potentially winning combination of bids is a combination in which no bids are selected – Bidder 1 is still an omitted Bidder. Therefore, the price of the C1 exemption lots must increase.

As it has been found necessary to increase the price of one exemption lot category, we can now move to the next omitted Bidder.

The assessment for Bidders 2 and 3 leads to the same result - they remain omitted when bidding for a hypothetical package that includes only the C1 exemption lot, but they are no longer omitted when bidding for a hypothetical package that includes only B lots. Therefore, the price of C1 must increase, but the price of B lots remains unchanged.

In the next round, prices for B lots and C1 lots are 25 and 40 respectively. The following bids are submitted:

Bidder	Bid type	Package		Amount
		B lots	C1	
1	Headline Bid	4	1	140
2	Headline Bid	4	1	140
3	Headline Bid	5	0	125

There are now two potentially winning combinations of bids. One includes the Headline Bids from Bidders 1 and 3. The other includes the Headline Bids from Bidders 2 and 3. Bidder 3 has its Headline Bid included in all potentially winning combinations of bids, but Bidders 1 and 2 do not and are therefore omitted Bidders.

Looking at Bidder 1:

- We construct a hypothetical Headline Bid for a package including the four B lots but not the C1 exemption lot. The corresponding bid amount is 100. When bids are re-evaluated, there are two potentially winning combinations of bids: one includes the Headline Bids from Bidder 2 and Bidder 3; the other one includes the Headline Bid from Bidder 2 and the hypothetical bid for Bidder 1. Bidder 1 is still an omitted Bidder. Therefore, the price of B lots must increase.
- We construct a hypothetical Headline Bid for a package including the C1 exemption lot but not any B lots. The corresponding bid amount is 40. When the bids have been re-evaluated, the

potentially winning combination of bids is now a combination including a bid from all three Bidders (namely the hypothetical bid for Bidder 1 and the Headline Bids from Bidder 2 and Bidder 3). Bidder 1 is no longer an omitted Bidder. Therefore the price of the C1 exemption lot need not be increased.

The assessment is analogous for Bidder 2 and gives the same result - Bidder 2 remains omitted when bidding for a hypothetical package that includes only B lots, but is no longer omitted when bidding for a hypothetical package that includes only the C1 exemption lot. Therefore, the price of B lots must increase, but not the price of C1.

Example 11: Identification of lot and exemption lot categories requiring a price increment

Information disclosed to Bidders with round results

If a further round is required, the Danish Energy Agency will inform each Bidder of the following:

- the lot categories that will have their price incremented for the following round;
- the Bidder's eligibility for the following round, and
- the number of extension rights still available for the Bidder.

If no further round is required, the Danish Energy Agency will inform each Bidder of the following:

- the lots that have been assigned to the Bidder; and
- the third auction stage price that the Bidder will have to pay.

No information will be released about the individual bids submitted by other Bidders or their third auction stage prices at this stage.

7.4 The fourth auction stage

The fourth auction stage determines how the specific frequencies available in the Auction are to be placed. As a result, only winners of A and B lots may participate in the fourth auction stage. Bidders who have not won any A lots or B lots will not be able to participate in the fourth auction stage.

The available frequencies are determined as follows.

- if Hi3G wins spectrum, the available frequencies will be 1710.0-1785.0 MHz paired with 1805.0-1880.0 MHz;

- otherwise, the available frequencies will be 1720.1-1785.0 MHz paired with 1815.1-1880.0 MHz.

7.4.1 Spectrum assignment

The spectrum to be assigned to each winner is:

- 2x10 MHz if the winner has been assigned an A lot, plus
- 2x5 MHz times the number of B lots won, minus
- 2x0.1³⁰ MHz if the bidder is placed at the top of the band.

If Hi3G wins frequencies in the Auction, 2x10 MHz will be added to Hi3G's spectrum assignment, corresponding to the size of Hi3G's Existing Licence.

Every 'feasible placement of Licences' must satisfy the following conditions:

Each winner will be granted a Licence with contiguous frequencies corresponding to the winner's spectrum assignment, which will not overlap the Licences of other winners.

Any frequencies that remain unassigned will form a contiguous frequency range and will be placed at the top of the band.

7.4.2 Frequency options

The Danish Energy Agency will determine the 'frequency options' that are available to each winner.

Each winning Bidder will be assigned the frequencies corresponding to one of the Bidder's frequency options.

The following two examples illustrate how the frequency options are determined.

³⁰ If Hi3G does not win spectrum, the winner assigned the lot at the top of the band will be assigned a frequency lot of 2x4.9 MHz.

Suppose that we have the following winning Bidders (in this example no allowance is made for placement of Hi3G's Existing Licence):

- Bidder 1 has been assigned an A lot and four B lots, so Bidder 1's spectrum assignment is 2x30 MHz (or 2x29.9 MHz if the Bidder were assigned the frequencies at the top of the band);
- Bidder 2 has been assigned an A lot and two B lots, so Bidder 2's spectrum assignment is 2x20 MHz (or 2x19.9 MHz if the Bidder were assigned the frequencies at the top of the band); and
- Bidder 3 has been assigned three B lots, so the Bidder's spectrum assignment is 2x15 MHz (or 2x14.9 MHz if the Bidder were assigned the frequencies at the top of the band).

The feasible placements of Licences in the frequency band are shown below.

Downlink	1710.1-1715.1	1715.1-1720.1	1720.1-1725.1	1725.1-1730.1	1730.1-1735.1	1735.1-1740.1	1740.1-1745.1	1745.1-1750.1	1750.1-1755.1	1755.1-1760.1	1760.1-1765.1	1765.1-1770.1	1770.1-1775.1	1775.1-1780.1	1780.1-1785.0	
Uplink	1805.1-1810.1	1810.1-1815.1	1815.1-1820.1	1820.1-1825.1	1825.1-1830.1	1830.1-1835.1	1835.1-1840.1	1840.1-1845.1	1845.1-1850.1	1850.1-1855.1	1855.1-1860.1	1860.1-1865.1	1865.1-1870.1	1870.1-1875.1	1875.1-1880.0	
Not available	Bidder 1							Bidder 2				Bidder 3				
	Bidder 1							Bidder 3				Bidder 2				
	Bidder 2				Bidder 3				Bidder 1							
	Bidder 3				Bidder 2				Bidder 1							
	Bidder 2				Bidder 1				Bidder 3							
	Bidder 3				Bidder 1				Bidder 2							

The frequency options for each winning Bidder are therefore as follows:

Bidder 1:

- 1720.1-1750.1 MHz paired with 1815.1-1845.1 MHz
- 1735.1-1765.1 MHz paired with 1830.1-1860.1 MHz
- 1740.1-1770.1 MHz paired with 1835.1-1865.1 MHz
- 1755.1-1785.0 MHz paired with 1850.1-1880.0 MHz

Bidder 2:

- 1720.1-1740.1 MHz paired with 1815.1-1835.1 MHz
- 1735.1-1755.1 MHz paired with 1830.1-1850.1 MHz
- 1750.1-1770.1 MHz paired with 1845.1-1865.1 MHz
- 1765.1-1785.0 MHz paired with 1860.1-1880.0 MHz

Bidder 3:

- 1720.1-1735.1 MHz paired with 1815.1-1830.1 MHz
- 1740.1-1755.1 MHz paired with 1835.1-1850.1 MHz
- 1750.1-1765.1 MHz paired with 1845.1-1860.1 MHz
- 1770.1-1785.0 MHz paired with 1865.1-1880.0 MHz

Example 12: Feasible placements in the frequency band in case all frequency lots are sold

Suppose there are the following winning Bidders:

- Hi3G has been assigned an A lot and two B lots, so Hi3G's spectrum assignment is 2x30 MHz including Hi3G's Existing Licence; and
- Bidder 2 has been assigned an A lot and four B lots, so its spectrum assignment is 2x30 MHz.

The feasible placements of Licences in the frequency band are shown below. Given the requirement that unsold spectrum must be placed at the top of the band, there are only two feasible placements of the two Licences.

Downlink	1710.0-1715.0	1715.0-1720.0	1720.0-1725.0	1725.0-1730.0	1730.0-1735.0	1735.0-1740.0	1740.0-1745.0	1745.0-1750.0	1750.0-1755.0	1755.0-1760.0	1760.0-1765.0	1765.0-1770.0	1770.0-1775.0	1775.0-1780.0	1780.0-1785.0
Uplink	1805.0-1810.0	1810.0-1815.0	1815.0-1820.0	1820.0-1825.0	1825.0-1830.0	1830.0-1835.0	1835.0-1840.0	1840.0-1845.0	1845.0-1850.0	1850.0-1855.0	1855.0-1860.0	1860.0-1865.0	1865.0-1870.0	1870.0-1875.0	1875.0-1880.0
	Hi3G						Bidder 2						Unsold		
	Bidder 2						Hi3G						Unsold		

The frequency options for each winning Bidder are therefore as follows:

Hi3G:

- 1710.0-1740.0 MHz paired with 1805.0-1835.0 MHz
- 1740.0-1770.0 MHz paired with 1885.0-1835.0 MHz

Bidder 2:

- 1710.0-1740.0 MHz paired with 1805.0-1835.0 MHz
- 1740.0-1770.0 MHz paired with 1805.0-1835.0 MHz

Example 13: Feasible placements in the frequency band where Hi3G wins frequencies, and there are unsold frequencies

7.4.3 Scheduling the fourth auction stage

The Danish Energy Agency will set the schedule for the fourth auction stage. The fourth auction stage will consist of a single round. The round will not start earlier than one clear business day after the announcement of results of the third auction stage. The Danish Energy Agency anticipates that the round will last for at least two hours and take place between 10.00 and 16.00 hours on a single business day.

When the round of the fourth auction stage is scheduled, the EAS of each Bidder will display:

- the scheduled start time of the round;
- the scheduled end time of the round;
- the scheduled duration of the round; and
- the frequency options available to the Bidder.

7.4.4 Submitting fourth auction stage bids

A fourth auction stage bid ('assignment bid') consists of a bid for a specific frequency option. A Bidder may submit an assignment bid for every one of its frequency options, though the bid amount for some or all of its frequency options can be zero. Assignment bids simply allow a winning Bidder to express specific preferences regarding its frequency options.

Assignment bids are submitted using a bid form provided by the EAS during the specified round time.

By default, the bid amounts for all frequency options are zero. Bidders may enter the bid amounts they wish to bid for each of their frequency options. The bid amount of an assignment bid reflects the maximum fourth auction stage price that a Bidder would be willing to pay for being assigned that specific frequency option. All bid amounts for assignment bids must be zero or positive and in whole DKK 1000.

As in the third auction stage, the procedure for submitting bids involves two steps:

- In the first step, Bidders specify their assignment bids and submit them for checking by the EAS.
- If the assignment bids are valid, in a second step the Bidder will be presented with a form displaying the bids. The Bidder will then be able to confirm submission of the bids or revert to the bid form to modify any bids. If an assignment bid is invalid, for example if a negative bid amount has been entered, the Bidder is returned automatically to the bid form.

The submission of assignment bids is only completed once a Bidder has confirmed the bids. At this point, no further changes can be made and the EAS will present the Bidder with a list of the submitted assignment bids.

Each winning Bidder will have one extension right in the fourth auction stage, and failure by a Bidder to confirm submission of bids before the scheduled end time of the round will trigger an extension in the same manner as in a round in the third auction stage (see Section 7.3.7).

7.4.5 Evaluation of bids

Winner Determination

Following the close of the round, the Danish Energy Agency will determine the winning placement of Licences by selecting the feasible placement of Licences that result in the

highest total value of bids. Hence, the winning assignment bids are the bids related to the winning placement of Licences.

Determination of fourth auction stage prices

The fourth auction stage prices will be determined using a pricing rule based on opportunity cost.

The fourth auction stage prices are determined on the basis of the following four conditions:

- **First condition:** The fourth auction stage price of a winning assignment bid must be greater than or equal to zero, but less than or equal to the bid.
- **Second condition:** The set of fourth auction stage prices must be sufficiently high that for every winning Bidder, or group of winning Bidders the sum of their fourth stage auction prices is at least the difference between:
 - the highest possible value across all feasible placements of Licences that could be achieved if the bid amounts of all assignment bids submitted by the winning Bidder or the group of winning Bidders under consideration were set to zero; and
 - the sum of the winning assignment bids from Bidders other than the winning Bidder or group of winning Bidders under consideration.

If there is only one set of prices that meets the first and second conditions, this determines the fourth auction stage prices.

- **Third condition:** If there are multiple sets of prices that fulfil the first and second conditions, fourth auction stage prices must minimise the total sum of prices across the winning Bidders. If there is only one set of prices that meets the first two conditions and minimises the total sum of prices, this determines the fourth auction stage prices.
- **Fourth condition:** If there are multiple sets of prices that satisfy the first three conditions, the set of prices that minimises the sum of squared

differences between the price for each winner and the individual opportunity cost³¹ for that winner is selected.

These conditions produce a unique fourth auction stage price for each winner.

7.4.6 End of the fourth auction stage

Once the Danish Energy Agency has determined the winning bids and the fourth auction stage prices, the result of the Auction will be announced to all Bidders and subsequently published on the Danish Energy Agency's website. The following information will be released to all Bidders:

- The identity of the winners.
- The frequencies assigned to each winner.
- The Licence price to be paid by each winner, which is equal to the sum of the prices determined at each of the four auction stages.

The auction process will then proceed to the Grant Stage, as described in Section 8.

7.5 Exceptional circumstances during the Auction

Whether exceptional circumstances exist during the Auction is determined by the Danish Energy Agency. Exceptional circumstances could include, for example, widespread technical failure or concern about possible collusion among Bidders.

If exceptional circumstances arise during the Auction, the Danish Energy Agency has the discretion to:

- postpone the scheduled end time for a round in progress;
- postpone the scheduling of further rounds;
- cancel a round that is either underway or for which results have not yet been released, and re-schedule the round; and/or

³¹ The individual opportunity cost of a winning Bidder of a specific spectrum assignment is the loss in value to all other Bidders (both winners and losers) that results from allocating the specific frequencies to the winner instead of allocating them among other Bidders. This is measured as the difference between the total value of winning Assignment Bids from other Bidders in the auction outcome and the total value of Assignment Bids that would be selected as the winning combination of bids in the case where the bid amounts for the Assignment Bids from the given winning Bidder were set to zero.

- void all bids received in the respective auction stage or restart the stage or auction.

In the event that a Bidder is excluded from the Auction, the Danish Energy Agency will not change the method of determining winning bids and prices (including fourth stage auction prices).

8 Granting of Licences

At the grant stage, winning Bidders are granted Licences for the frequencies assigned to them in the Auction or as part of the qualification stage if there is only one Bidder. Licences are only granted once Bidders have fulfilled the payment terms.

8.1 Payment of Licence Price

8.1.1 Payment schedule

For each winning Bidder, a single Licence price will be determined for the Licence won by that Bidder. The Licence price will be the sum of the prices established in the first, second, third and fourth auction stages for each Bidder.

The Bidder has to decide how to pay the Licence Price. The Bidder has the following options:

1. an Initial Payment comprising 20% of the Licence price which will be payable before the Licence is issued and a deferred payment comprising 80% of the Licence price which will be payable in eight equal annual instalments, with the first instalment due on the date falling one year from issue of the Licence; or
2. payment of the Licence price in full.

Following the announcement of the Auction result, the Danish Energy Agency will notify winning Bidders of their schedule of payments, including a date by which their payment of the Licence price in full or initial payment must be paid into the bank account of the Danish Energy Agency.

Any penalties incurred during the Auction must be paid in full at the same time as the payment of the Licence Price in full or the Initial Payment.

The Licence price in full or the initial payment must be paid into the Danish Energy Agency's bank account within the time stipulated. This will be at most 10 days after notification by the Danish Energy Agency. However, the Danish Energy Agency may, at its sole discretion, extend the time limit in order for the winning Bidder to fulfil these obligations. However, interest will accrue on the amount outstanding in relation to the Licence Price from the due date until payment has been effected, at a rate of interest determined by the Interest Act.

Details of the Danish Energy Agency's bank account are as follows:

Bank: Danske Bank
Registration number: 0216
Account name: Danish Energy Agency
Account number: 4069071767
Swift number: DABADKKK
IBAN number: DK3102164069071767

8.1.2 Demand guarantee for the Deferred Payment

Winning Bidders are required to provide a demand guarantee for deferred payments within the time stipulated if they have chosen only to pay an upfront fee of 20% of the Licence price. This will be at most 10 days after notification by the Danish Energy Agency. The guarantee must be provided in the form set out in Annex F of this Memorandum. In particular, the guarantee must be:

- payable on demand to the Danish Government as represented by the Danish Energy Agency;
- issued by a bank or an insurance company which does not control the Bidder, nor is controlled by the Bidder nor is controlled by a Person who controls the Bidder, and which is registered in the European Economic Area and has, as a minimum, a long-term Debt A rating from Standard & Poors or Fitch Rating of at least A or from Moody's Investors Service Limited of at least A2; and
- for an amount equal to the total instalments payable over the next three years or, if shorter, that due during the remaining period.

A Licensee is required to notify the Danish Energy Agency without delay in the event that the guarantor's credit rating falls below the required level. The Licensee will then have two months to provide a new guarantee. If a Licensee fails to put in place a new guarantee within this period, the Danish Energy Agency may revoke the Licence in accordance with clause 87 in the Danish Energy Agency's Decision.

8.2 Costs of arranging and implementing the Auction

As stated in clause 74 in the Danish Energy Agency's Decision, the Danish Energy Agency shall charge a fee to Bidders to whom Licences have been issued, to cover the costs associated with the Danish Energy Agency's arrangement and implementation of the Auction. The exact amount cannot be determined until the Auction is finished. However, our current estimate is that the total cost is approximately DKK 10 million.

The costs will be divided proportionally among winning Bidders based on the amount of spectrum won by the individual Bidders in the Auction in relation to the share of the total amount of spectrum offered.

The Danish Energy Agency will set the due date in respect of this payment following the Auction. If the Licensee does not pay this fee, the Danish Energy Agency may revoke the Licence as specified in clause 87 in the Danish Energy Agency's Decision, cf. Annex C, subject to the principle of proportionality.

8.3 Default and return of the Licence

If a winning Bidder fails to make a payment of the Licence Price or a part of the Licence Price on the due date, or any other fees, interest will be charged from that date onwards on the amount outstanding, in accordance with the Act on Interest. Failure to pay instalments or other fees could result in revocation of the Licence, cf. clause 87 in the Danish Energy Agency's Decision.

If a Licence is revoked by the Danish Energy Agency, the Licensee shall be under an obligation to pay on demand an amount equivalent to 30% of the Licence Price, or, if payment of a smaller amount of the Licence Price is outstanding, then such smaller amount (see also Section 5.4.5).

A Licensee may at any time return a Licence. Upon return of its Licence to the Danish Energy Agency, the Licensee may terminate future rights and obligations not yet due by paying not later than the date of return an amount equivalent to 30% of the Licence Price, or, if payment of a smaller amount of the Licence is outstanding, then such smaller amount.

If Licences are revoked or returned, the Licence Price paid or other amounts paid in connection with the Auction will not be refunded, and the obligation to pay any instalments due and interest thereon will still exist.

If Licences are revoked or returned during a calendar year for which the annual frequency charge has been paid, a corresponding proportionate refund will be offered for the frequency charge.

8.4 Issue of Licences

Once the payment of the Licence Price in full or the Initial Payment and the demand guarantee have been received by the Danish Energy Agency, the Licences will be granted to the winning Bidders. This will be in the form similar to the Draft Licence shown in Annex D.

8.5 Announcement of results

Upon conclusion of the Grant Stage, the Danish Energy Agency will make a public announcement comprising:

- the number of Bidders that participated in the Auction;
- the identity of the winning Bidders;
- the frequencies assigned to each of the winning Bidders; and
- the Licence Price to be paid by each winning Bidder.

The Danish Energy Agency also has discretion to publish full details of the bids submitted in the Auction, including the identity of all Bidders and the bids they submitted. The Danish Energy Agency will decide when and if it intends to publish this information following the conclusion of the Grant Stage.

Note that the rules of the Public Administration Act and the Open Administration Act on access to documents will be applicable to information and documents submitted in connection with the Auction.

9 Communication

Section 9 contains information about communication between the Danish Energy Agency and Bidders before and during the Auction, and procedures in the event of exceptional circumstances.

9.1 Publication of information

The Danish Energy Agency will publish all necessary documents and updates on the Auction of the 1800 MHz band on its website: <http://www.ens.dk>. Documents and updates will always be available in Danish. After publication of the final auction documents, an English version will be available at: <http://ens.dk/en>.

In the event of discrepancies between the Danish and English versions of the information published on the Danish Energy Agency's website, the Danish version will prevail.

9.2 Process for enquires before the start of the auction process

Questions concerning the Information Memorandum and the auction process should be addressed to the Danish Energy Agency. Communication shall be made in writing, by post or e-mail, to:

Danish Energy Agency
Amaliegade 44
1256 Copenhagen K
E-mail address: tele@ens.dk

Questions should be clearly labelled "**1800 MHz Auction**". Questions shall be submitted in Danish with an English translation.

All interested parties are entitled to submit questions to the Danish Energy Agency in writing up to eight calendar days prior to the Application Date. The Danish Energy Agency will produce an anonymous version of all questions and answers in Danish, which will be published on the Danish Energy Agency's website as far as possible 48 hours before expiry of the deadline for Applications. It is estimated that the responses to a series of questions could take up to five working days. As far as possible, a non-binding English translation of questions and answers will be provided.

9.3 Communication during the auction process

Following the submission of Applications through to the conclusion of the Grant Stage, Bidders may ask questions and contact the Danish Energy Agency via phone or e-mail at:

Center for Tele

Phone number of auction telephone: 33 92 92 70

E-mail address: tele@ens.dk

The Danish Energy Agency will endeavour to answer questions as soon as possible. The Danish Energy Agency will produce an anonymous version of all questions and answers, which it will publish on its website.

During the third and fourth stages of the Auction, the EAS has a one-way messaging system that allows the Danish Energy Agency to send messages and notices to Bidders. Examples of notices that might be sent out to Bidders during the bidding phase include:

- the timetable for forthcoming Rounds; and
- price increments applicable in forthcoming rounds.

Note that to the extent possible, the timetable for the daily Rounds will be announced one day in advance.

The Danish Energy Agency may use the EAS, phone or e-mail to send individual messages to Bidders. Bidders cannot use the EAS to contact the Danish Energy Agency. They must use phone or e-mail as mentioned above.

9.4 Communication during exceptional circumstances

In the event of problems with the EAS or other exceptional circumstances, Bidders should contact the Danish Energy Agency using phone or e-mail to discuss the problem.

In the event that the Danish Energy Agency decides to postpone or suspend the Auction, or otherwise use its exceptional powers, the Danish Energy Agency will make all reasonable efforts to notify Bidders of its decision and update them on any changes to the Auction status.