



Council of the European Union  
General Secretariat

November 2017

**Annex 1 to the tender specifications**  
***Functional and technical specifications***

**Call for tenders UCA-17/066**

**Restricted procedure**

**Upgrading and maintenance of the fire detection system  
in the Justus Lipsius building**

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## 1. PART A - BACKGROUND AND GENERAL INFORMATION

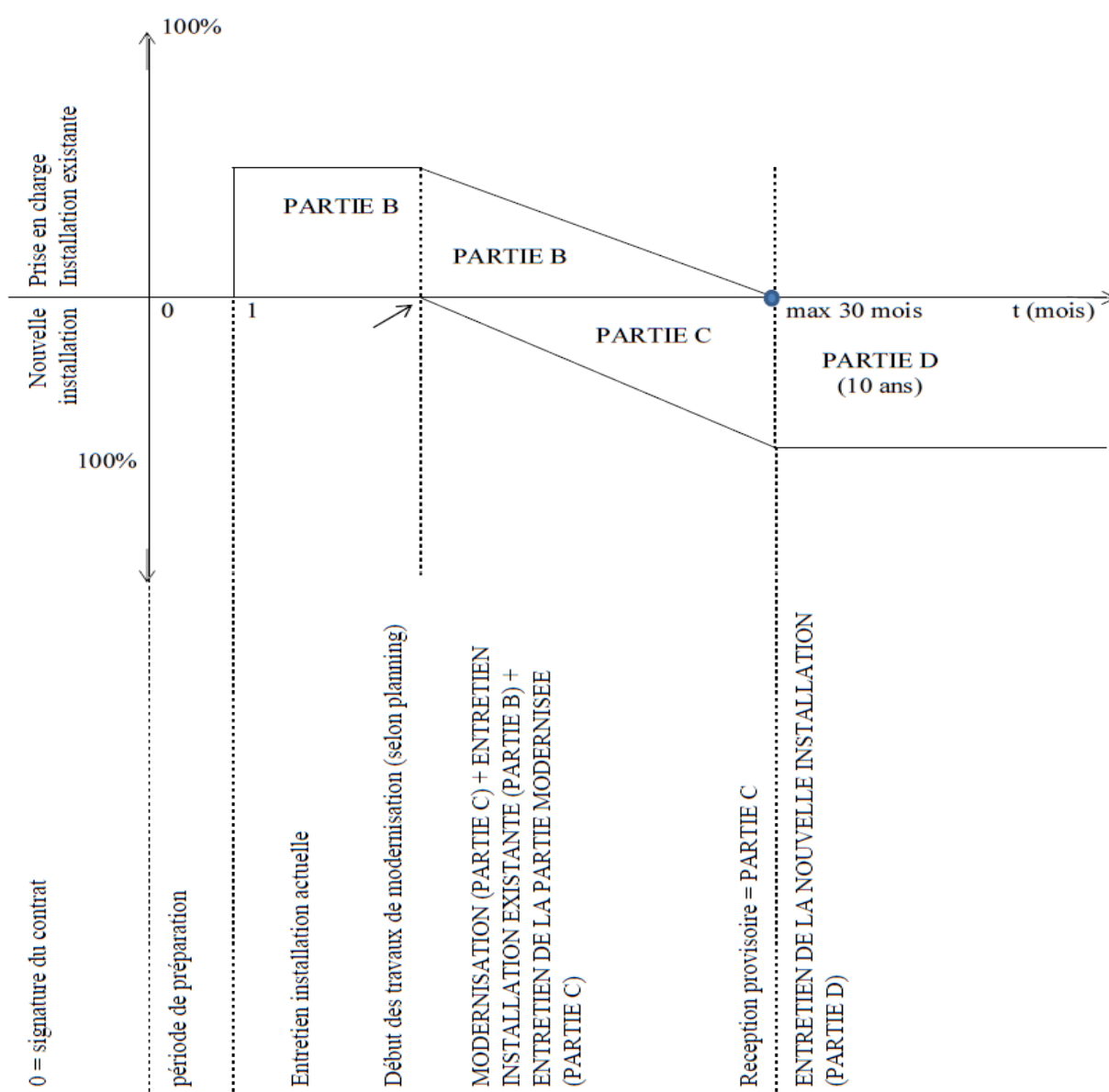
### 1.1. Background

The main purpose of this contract is to upgrade the fire detection system in the Justus Lipsius building (JL) located at Rue de la Loi/Wetstraat 175, 1048 Bruxelles/Brussel.

The services provided comprise:

- maintenance of the current fire detection system until the upgrading works are completed,
- works to upgrade the current system and maintain the system throughout those works,
- maintenance of the new system for a maximum of ten years from the scheduled date for provisional acceptance of the upgrading works,

in line with the following plan:



The current fire detection system mainly has 'Securiplex Montreal' components.

The fire detection system consists of three networks of control units (control and indicating equipment, **CIE**) and one management system:

Control unit networks:

- One warning network for announcing any outbreak of fire and for automatic triggering of the security equipment. This network will be composed of:
  - one master control unit
  - seven satellite control units
  - 5 608 ionisation detectors
  - 2 300 opto/thermovelocimetric detectors
  - 89 duct detectors
  - seven beam-type linear detectors
  - 493 manual push buttons
  - 603 fire door closers
  - 641 digital output modules
  - 55 digital input modules
  - seven repeater panels
- a network of servomechanisms for sending information to the fire brigade panels, the central telephone unit and the document transportation control unit. This network will be composed of:
  - one master control unit
  - four satellite control units
- an alarm network for ordering evacuation of the buildings. This network will be composed of:
  - one master control unit
  - seven satellite control units
  - 590 evacuation sirens
  - four digital input modules
  - four 'fire brigade' repeater panels
  - 20 flashing beacons

Management system:

- one management system comprising:
  - one master control station
  - three remote work stations for controlling and viewing the various types of equipment in the installation

A more detailed description of the current system is given in Appendix 1 and the block diagrams contained in Appendix 2.

## 1.2. Purpose of this contract

The contract includes the following services:

- **Part B (point 2): Maintenance of the current system**

From the moment the contract comes into force the contractor will be responsible for maintenance of the current system in accordance with the specifications in Part B of this Annex. Part B will be applicable during the period between the coming into force of the contract and the end of the works to replace the system, on the date of provisional acceptance.

- **Part C (point 3): Gradual upgrade of the system within a maximum of 30 months from the date on which the contract comes into force.  
Maintenance of the current system, in accordance with the specifications in Part B, and of the new system, in accordance with those in Part D, during the upgrading works.**

The contractor will be required to replace the fire detection system in accordance with the specifications (technical specifications and replacement schedule) in Part C of this Annex. During that period when the two different fire detection systems will co-exist, the contractor will maintain both the original system, in accordance with the specifications in Part B, and the new system, in accordance with the specifications in Part D.

Part C of the technical specifications will be applicable from the start of the works to replace the system until the date of provisional acceptance of the new system. The system will have been accepted within a maximum of 30 months from the date on which the contract comes into force.

- **Part D (point 4): Maintenance of the new system for a maximum of ten years from the date scheduled for provisional acceptance of the new system.**

Starting from the acceptance of the new fire detection system, the contractor will be responsible for maintenance of the upgraded fire detection system in accordance with the specifications in part D of this Annex.

- **Part E (point 5): Various projects to adapt the system**

For the entire duration of the contract, the contractor will be responsible for the various projects adapting/extending the fire detection system (linked to both the current and new systems). The specifications for those projects are contained in Part E of this Annex.

At any time from the entry into force of the contract, preventive and corrective maintenance measures and any adaptation works needed on the fire detection systems will be carried out by the contractor in respect of both the current, non-upgraded system and the new system, including during the upgrading period when the two systems will co-exist.

### **1.3. Start / End of contract**

#### **1.3.1. Preparation period**

The contractor will have a two-month preparation period between the entry into force of the contract and the start of actual maintenance services (Part B). During that period, the contractor will take the measures needed to meet the following obligations:

- The contractor must acquaint itself with the documents, working methods, access procedures, maintenance procedures and emergency repair procedures for the systems.
- The contractor will enter the relevant phone call details in its 24-hour control centre. The contractor will provide the GSC with a detailed schedule of maintenance operations for approval. This maintenance schedule will be set out line by line and will list the replacement works for the installation. The document will become contractually binding once approved by the Secretariat.
- Two months, at most, after the entry into force of the contract, the contractor will provide the CV and contact details of the team coordinating the project (cf. Point 1.4.2.).
- On the date on which the actual maintenance work begins, the contractor will be fully acquainted with the state, nature and composition of the systems. The contractor may not invoke ignorance or insufficient knowledge of the organisation or premises of the GSC or of the technical installations either to refuse to meet its commitments or to claim compensation or additional payment.

#### **1.3.2. End of contract**

At the end of the contract, the contractor will return the systems to the Secretariat properly maintained and in perfect working order.

At the end of the contract, the contractor must deliver to the GSC:

- Any materials, keys and access cards that the GSC has provided it to enable the performance of its tasks.
- The up-to-date technical documentation and plans.
- The up-to-date quantities of material.
- The documents in its possession concerning the systems for which it was responsible.
- A 'stock-taking' report on the systems, which must be endorsed by the GSC and must also indicate all major modifications made to the systems.
- A maintenance certificate for the systems together with the final inspection report by the SECT (the official external technical inspection service), clean and/or without comments. This inspection report must be carried out in accordance with the legal standards and rules in force on the date when the tender was launched.

To that end, a joint inspection must be carried out in the presence of persons representing the GSC and the contractor.

During this inspection, a record will be made of any failures by the contractor to meet its obligations under this contract.

The contractor will remain liable for deficiencies detected within the 90 days following the date on which the contract ends.



The contractor must carry out any restoration work required due to failings on its part within less than 30 calendar days. In the event of non-compliance with these time limits, the Secretariat reserves the right, after having served formal notice, to take any measures necessary for the restoration to be carried out, and to charge the contractor for the costs.

#### **1.4. Management of the project / Communication**

##### ***1.4.1. Contact point of the General Secretariat of the Council of the European Union (GSC)***

For the performance of the contract, the Technical Management service of the Buildings Unit will be the sole contact point of the GSC for the contractor, except for requests from the GSC's call centre for emergency repairs outside normal service hours.

The Technical Management service will be assisted by the Safety Unit.

##### ***1.4.2. Project Management - management of the contract***

The contractor must set up a team in charge of managing the contract (see Appendix 7).

*The tenderer must attach to its tender a structure for managing Part C of this project, by providing an organisation chart of the structure it intends to set up, showing the profiles of each stakeholder (skills/experience), the links between them, and the responsibilities of each with regard to the various parts of the contract.*

*This organisation chart will become contractual once the tender is accepted, and non-compliance may give rise to penalties (see Section 1.11.1.). It will be attached as Appendix 7.<sup>1</sup>*

##### ***1.4.3. Call management – contractor's call centre***

The contractor must have an efficient central call centre which is operational 24 hours per day every day of the year, to respond to all calls from the GSC. It must answer the calls and initiate the necessary action. There must be no limit on the number of such calls, irrespective of the reasons why they are made, nor on the action resulting therefrom.

The contractor must have an 'escalation' procedure in place for dealing with all possible scenarios.

If the contractor calls on the services of a sub-contracted specialist company, that fact must be transparent to the GSC's services.

Each call-out request must be initiated by a call from the maintenance or security call centres or from the Safety Unit to the contractor's call centre.

During the two-month preparation period under the contract, the contractor must provide a telephone number and an e-mail address for exclusive use by the Secretariat's services, and a second telephone number for use in the event of problems.

The contractor's call centre must be familiar with and must use the system and building codes and acronyms used at the Secretariat.

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<sup>1</sup> See Annex II to the tender specifications ('Demonstration of conformity with the tender specifications - Minimum requirements - List of documents to be supplied').

## 1.5. Work schedule (see Appendix 8)

*The tenderer must attach to its tender a general schedule for the works including at least the following steps:*

- Step 1 - signing and entry into force of the contract*
- Step 2 - preparation period*
- Step 3 - start of the maintenance work on the current system (start of Part B)*
- Step 4 - start of the gradual upgrade of the system (start of Part C)*
- Step 5 - end of the maintenance work on the current system (end of Part B)  
provisional acceptance of the new system (end of Part C)*
- Step 6 - start of the comprehensive maintenance work on the new system (start of part D)*

*The tenderer should distinguish between these different steps as far as possible whilst ensuring maximum consistency and clarity.*

*The tenderer's attention is drawn to the binding nature of this schedule, i.e. a complete upgrade of the system within a maximum of 30 months from the date of entry into force of the contract.*

*This schedule will become contractual once the tender is accepted, and non-compliance may give rise to penalties (see Section 1.11.2.). It will be attached as Appendix 8.<sup>2</sup>*

## 1.6. Working days and hours

Three periods will be used in the contract:

- Normal working hours: Monday to Friday (except national public holidays in Belgium, with the exception of 11 November) from 7.00 to 18.00
- 'Non-framework hours 1': - Monday to Friday (except national public holidays in Belgium, with the exception of 11 November) from 18.00 to 7.00  
- Saturdays
- 'Non-framework hours 2': - national public holidays in Belgium (except 11 November)  
- Sundays

The national public holidays in Belgium are as follows:

- 1 January (New Year's Day)
- Easter Sunday and Easter Monday (variable dates)
- 1 May (Labour Day)
- Ascension Day (sixth Thursday after Easter)
- Whit Sunday and Whit Monday (seventh Sunday and Monday after Easter)
- 21 July (Belgian national day)
- 15 August (Assumption)
- 1 November (All Saints' Day)
- 11 November (Armistice Day) - not included in the GSC's calendar of public holidays
- 25 December (Christmas)

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<sup>2</sup> See Annex II to the tender specifications ('Demonstration of conformity with the tender specifications - Minimum requirements - List of documents to be supplied').

## **1.7. Organisational restrictions**

### **1.7.1. *Secure building***

Some rooms / areas in the building have restricted access. Prior notice must be given, at least 72 hours in advance, of any operation planned in these secure areas.

### **1.7.2. *Maintenance of the fire detection system***

The fire detection system is vital to the building's security. When replacing equipment no transmission lines may be cut off from fire detection outside normal working hours (see 1.6.) without authorisation from the GSC.

Work may be carried out simultaneously on a maximum of two adjoining firewall zones.

### **1.7.3. *Functioning of sirens***

Functionality tests on sirens must always be performed outside normal working hours and planned 24 hours in advance.

### **1.7.4. *Functionality test***

Functionality tests for alarms and servomechanisms must always be performed outside normal working hours and planned 48 hours in advance.

### **1.7.5. *Shut-down of the fire detection system***

Any shut-down of the fire detection system/servomechanisms/sirens must be planned (48 hours in advance).

Incidents must be reported immediately to the GSC (the communication method will be communicated at the preparatory meetings).

### **1.7.6. *Facility servomechanisms (using public address CIE)***

It is not possible for the facility servomechanisms (e.g. fire doors) to be kept fully operational when switching a detection line from old CIE to new CIE. Central CIE must therefore be completely replaced within a maximum of twelve calendar days.

### **1.7.7. *'Fire brigade' panel servomechanisms (using servomechanism CIE)***

Servomechanisms in servomechanism control units must be kept continuously operational. No shut-down period will be tolerated for these servomechanisms.

### **1.7.8. *Penalties***

Failure to comply with the requirements of point 1.7 will result in penalties (see 1.11.5).

## **1.8. Reporting/Meetings**

Technical management of Parts B, C, D and E of the contract will be performed by way of meetings and reports supplied by the contractor. The schedule of meetings will be drawn up by the GSC.

### **1.8.1. *Coordination meetings***

Meetings related to the upgrade of the system (Part C) will initially be held on a weekly basis. Meeting reports will be drawn up by the contractor.

### **1.8.2. *Reports***

Reports will be drawn up by the contractor.

#### **Equipment management chart**

In accordance with the annual schedule of meetings drawn up by the GSC, the contractor must submit a monthly management chart in electronic format. The management chart must consist of:

- The previous twelve consecutive months, to allow the tracking of call-out requests;
- A report specifying order status, ongoing action, comments from the official inspection body in addition to the solutions to the problems found in the systems.
- A summary table of the progress of any preventive maintenance carried out.

Changes to the management chart may be made during the course of the contract.

#### **Specific reports**

At the request of the GSC, the contractor must be able to provide information such as breakdown percentages, the number of detections by zone, call-out times and any report required for the correct operation of the systems.

### **1.8.3. *Progress of the upgrade***

Every month the contractor must submit to the GSC:

- a detailed updated schedule (see 3.1.2 of Part C);
- details of functioning equipment in the old system (see 3 of Part B);
- details of functioning equipment in the new system (see 1.3 of Part C).

## **1.9. Licenses**

The prices in the 'tender and financial conditions' bill of quantities ([Annex III to the tender specifications and Annex II to the draft contract](#)) must include all the licences necessary for the operation of the system (including management) for the duration of the contract.

## **1.10. Obligations of the GSC - Facility/Methods of communication**

The GSC will make available to the contractor an office of approximately 15 m<sup>2</sup> equipped with standard furniture and a store room (+/- 15 m<sup>2</sup>).

The GSC will afford the contractor's personnel, in the buildings, the possibility of making outside calls provided that such calls are of a strictly professional nature and work-related. Calls other than internal and local ones will be charged to the contractor.

Staff working in our buildings will have a mobile phone (supplied by the contractor) that can be used in the organisation of the tests; the phone number will be communicated to the GSC.

Any damage to the premises and property made available by the GSC will be made good by the contractor. If the contractor fails to honour its obligations, the GSC itself will, at the contractor's expense, take all necessary steps to restore the premises to their former state and to replace the property.

## **1.11. Penalties/Compensation**

### ***1.11.1. Project Management - Contract management (see 1.4.2 of Part A and Appendix 7)***

Failure to comply with point 1.4.2 of Part A concerning project management may result in a penalty of EUR 1 000 per working day of non-compliance. It is understood that this penalty will be applicable if the staff described in Appendix 7 are not present or do not have the skills/experience specified.

### ***1.11.2. Work schedule (see 1.5 of Part A and Appendix 8)***

Failure to comply with the schedule in Appendix 8 may result in a penalty of EUR 500 per working day of delay.

### ***1.11.3. Familiarisation with the systems (see 2.4.4 of Part B and Appendix 9)***

Failure to comply with the methodology proposed for the acquisition of knowledge leading to a failure to achieve the expected results may result in a penalty of EUR 500 per working day until the return to compliance of that which is described in Appendix 9.

### ***1.11.4. Delay related to call-out times - (see 2.4.2 of Part B)***

Failure to comply with call-out times may result in a penalty calculated as follows:  
EUR 25 per 15-minute delay.

### ***1.11.5. Organisational constraints (see 1.7 of Part A)***

Any infringement of the organisational constraints described in point 1.7 of Part A may result in compensation of EUR 500 per infringement.

### ***1.11.6. Detailed schedule (see 3.1.2 of Part C and Appendix 8)***

Any infringement related to a failure to update the detailed schedule or non-disclosure thereof to the GSC may result in compensation of EUR 500 per infringement.

#### **1.11.7. Preventive maintenance (see 2.4.1 of Part B and 4.4.3 of Part D)**

Failure to comply with Article 11 of standard NBN S21.100-1 may result in a penalty calculated as follows:  
EUR 100 per day of delay and per missing service.

#### **1.11.8. Corrective maintenance (see 4.4.4 of Part D)**

Failure to comply with call-out times may result in a penalty calculated as follows:  
EUR 25 per 15-minute delay.

#### **1.11.9. Reliability obligation (see 4.4.13 of Part D)**

Failure to comply with this obligation may result in the following penalty:  
EUR 500 per extra false alarm calculated for each contractual year.

#### **1.11.10. Performance delay (see 5.4.6 of Part E)**

Any order not carried out within the agreed time may result in compensation of EUR 200 per working day of delay.

#### **1.11.11. Invoicing delay**

The contractor will deploy the necessary administrative resources to ensure that invoices are correctly followed up. The following maximum invoicing deadlines must be respected:

- Part B (maintenance of the existing system): monthly invoices will be sent in the month X+2 (see 2.3);
- Part C (upgrade of the system): monthly invoices will be sent in the month X+3 (see 3.1.3);
- Part D (maintenance of the upgraded system): quarterly invoices will be sent in the quarter X+1 (see 4.3);
- Part E (works/projects): invoices will be sent in the month X+2 (from acceptance of the works) (see 5.4.4).

The GSC reserves the right to apply a penalty of EUR 100 per working day of delay.

#### **1.11.12. Delay in the withdrawal of observations made at the time of provisional acceptance (see 3.6.10 of Part C)**

Non-compliance with the time limit agreed for the full withdrawal of observations made in the provisional acceptance report may result in compensation of EUR 200 per working day of delay.

### **1.12. Glossary**

- CCT: Technical operating centre
- CDI: Fire detection centre
- CDS: Security centre
- CIE: Control and indicating equipment
- SECT: External technical inspection service
- GSC: General Secretariat of the Council

## **2. PART B – MAINTENANCE OF EXISTING SYSTEM**

### **2.1. Subject-matter**

This Part concerns preventive maintenance, emergency repairs and the technical operation of the existing fire detection systems.

### **2.2. Period**

Part B will start two months after the entry into force of the contract, at the start of the services, and will finish when the existing system has been replaced (at the end of the upgrading works of Part C, once the provisional acceptance has been approved).

### **2.3. Payment**

All of the services described in this Part will be invoiced monthly on the basis of the unit prices listed in the bill of quantities in Part B (*Annex III to the tender specifications and Annex II to the draft contract*).

The system upgrading works described in Part C of this Annex will give rise to a monthly proposal (see 1.8.3 of Part A) to adjust the volume of the equipment of the existing system. After approval by the GSC, the monthly amounts invoiced will be adjusted by application of new volumes of items B.1 to B.16.

### **2.4. Missions of the contractor**

The contractor guarantees that all work and services will be performed by a qualified workforce.

The obligations for this Part are as follows:

- implementation of the preventive maintenance in accordance with point 2.4.1;
- call-out times for emergency repairs in accordance with the specifications in point 2.4.2;
- provision of a stock of spare parts in accordance with the specifications in point 2.4.3;
- services necessary for familiarisation with and management of the existing system (materials, programming and servomechanism modes) in accordance with the specifications in point 2.4.4.

#### **2.4.1. Preventive maintenance**

Preventive maintenance will be carried out in accordance with Article 11 of standard NBN S21-100-1.

### **2.4.2. Emergency repairs**

- ✓ The contractor must have a call centre (see 1.4.3 of Part A).
- ✓ The contractor must intervene within the time limits specified below:

<i>Call-out times</i>	<i>Breakdown</i>
Normal working hours (see 1.6 of Part A)	30 minutes
Outside of normal working hours (see 1.6 of Part A)	two hours

<i>Restart times</i>	<i>Breakdown</i>
Normal working hours (see 1.6 of Part A)	twelve working hours
Outside of normal working hours (see 1.6 of Part A)	24 hours

Any delay in relation to the above time limits may entail the payment of compensation (see point 1.11.4).

If the breakdown solution requires the replacement of parts or components which are not stocked at the GSC or are not consumables, the time limits will be suspended pending the submission of a tender for the repair (in accordance with the specifications in Part E).

The following are included in the monthly payment:

- ✓ The replacement of consumables. Consumables are defined as:
  - batteries;
  - screws and nuts, bolts, terminals;
  - fuses.
- ✓ Breakdown solutions which do not require the replacement of equipment or parts.
- ✓ Breakdown solutions which require the replacement of consumables.
- ✓ The replacement of equipment stocked by the GSC and made available to the contractor (see 2.4.3).

### **2.4.3. Provision of a stock of spare parts**

The GSC will provide the contractor with a stock of spare parts composed of the following:

- ten ionisation detectors
- two optical smoke detectors
- one thermodifferential fire detector
- one manual push-button
- two output modules fitted with two outputs
- two input modules fitted with four inputs

This stock will allow rapid repairs to be made to the system.



#### **2.4.4. Task of understanding and managing the existing system (cf. Appendix 9)**

The unit amount B.17., as referred to in the price schedule (financial offer - *Annex III to the tender specifications and Annex II to the draft contract*), will include the services necessary in order to gain a full understanding of the existing system with a view to its replacement, including verification of the accuracy of the number of items of equipment listed in the bills of quantities.

*The tenderer must attach to its tender in Appendix 9 the methodology proposed in order to gain a full understanding of the system with a view to its replacement; such a methodology should incorporate as few unknown factors as possible. The tenderer must provide a detailed **schedule** describing the tasks and resources which it will deploy and the methods proposed to ensure that it has sufficient knowledge of the existing system to execute the upgrade of the project (Part C).*

*In the event of the contract being awarded, this proposal will become contractually binding and will be attached as Appendix 9.<sup>3</sup>*

Commencement of the upgrading works (start of Part C) will be conditional upon the assurance by the GSC and the contractor that all the data necessary for the successful execution of said upgrade have been acquired and mastered.

### **3. PART C - UPGRADE OF THE SYSTEM**

#### **3.1. Principles**

##### **3.1.1. Subject-matter**

The subject-matter of Part C is as follows:

- upgrade of the current detection system,
- comprehensive maintenance of the new equipment installed up to the time of provisional acceptance of the system.

##### **3.1.2. Period / Schedule (see 1.8.3 State of progress)**

Part C will commence on the first day of the work to replace the system and will end on the date of provisional acceptance thereof. The work to replace the system will adhere to the schedule set out in Appendix 8, subject to the application of a penalty (cf. 1.11.2. of Part A of this Annex).

One month prior to the actual commencement of the work to replace the system, the contractor will provide the GSC with a detailed **schedule** for the work. The level of detail for that schedule will be the line of detection or sounder line. The schedule must comply with the contractual schedule (cf. Appendix 8) and may be adapted on the basis of the actual progress made, taking into account compliance with the general schedule and the constraints referred to in point 1.7 of Part A. The state of progress of the detailed schedule will be submitted to the GSC on a monthly basis. Any change in the detailed schedule must be made known to the GSC immediately and confirmed by a new schedule to be approved by the GSC. Failure to comply with this obligation may give rise to the penalty described in point 1.11.6. of Part A.

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<sup>3</sup> See Annex II to the tender specifications ('Demonstration of conformity with the tender specifications - Minimum requirements - List of documents to be supplied').

### **3.1.3. Payment**

**The total price of Part C will have to be adapted if necessary on the basis of the exact number of items of equipment verified in connection with the task of understanding and managing the existing system (cf. 2.4.4. of Part B).**

All the services described in this part will be invoiced on the basis of the state of progress, calculated

as follows:

P = total price of Part C

D1 = total number of detectors + sirens + manual push-buttons in the existing system

D2t = total number of detectors + sirens + manual push-buttons installed and commissioned in the new system at moment t.

The state of progress will be calculated each month as follows:

Invoice at moment t =  $0.75 * P * D2t / D1$  - (total of preceding states of progress)

The balance of 25 % will be released as follows:

- 15 % at the time of provisional acceptance

- 10 % on the withdrawal of the observations made at the time of provisional acceptance in accordance with the procedure laid down in point 3.6.10.

### **3.1.4. Maintenance of the upgraded equipment**

The equipment installed in accordance with Part C of this Annex will be maintained on the basis of the technical specifications set out in Part D (including call-out and restart times). The contractor will therefore include the costs of this comprehensive maintenance in the costs for Part C.

### **3.1.5. Development of the systems**

Since the building undergoes continual alterations and renovation work, the fire detection system is regularly updated. The version of the plans, programming equations (Wizcon), servomechanisms and bills of quantities provided in the tender documents is that applicable at the time of analysis of the project.

It is therefore the contractor's responsibility to execute this project with due regard for the most recent developments (plans, equations, servomechanisms, etc.) at the time at which the various components of the fire detection system are replaced. Only changes in respect of the volume of equipment may give rise to a price adjustment on the basis of the unit prices listed in the bill of quantities.

### **3.1.6. Regulatory compliance**

With regard to the current fire detection system, the GSC is aware of and accepts the fact that the preserved part of the existing system does not comply fully with either the new rules (NBN S21-100-1 and 2) or the General Regulations on electrical installations (Article 104, one-hour fire-resistance rating for vital equipment, plant rooms, etc.).

Some of those discrepancies will be rectified once the systems have been adapted (Part E). Under no circumstances may any new discrepancies arise either during or after the replacement of the system.

## 3.2. Upgrade of the system

### 3.2.1. General remarks

The project comprises all the supplies, works and labour necessary for the replacement of the fire detection system.

All the works covered by this project are explicitly described in the documents referred to in or annexed to this document, and are implicitly necessary for the upgrade of a fire detection system in accordance with usual good practice and the standards in force at the time of the invitation to tender.

It should be noted that the contractor remains responsible for ensuring that the existing fire detection system remains in good working order for the entire duration of the building project, and must take every necessary precaution to remedy any defect within the contractual deadlines referred to in Part B.

Furthermore, it acknowledges having taken note of the information necessary for the performance of the contract; in short, it is aware of the difficulties and specificities of the work to be executed, which is the subject-matter of the contract, and therefore it has submitted its tender in full knowledge of the facts.

### 3.2.2. Services covered by Part C

This project includes the following items in accordance with the detailed schedule set out in point 3.1.2 of Part C:

- ▲ Item C.1: the dismantling and removal of the existing system,
- ▲ Item C.2: the dismantling, temporary storage, transportation and recycling of the ionisation detectors in accordance with the standards and requirements in force in Belgium, and more specifically in the Brussels Capital Region, together with the provision of the corresponding certificates and the necessary declarations to the competent authorities before, during and after such recycling. All the safety regulations must be strictly observed.
- ▲ Item C.3: the detailed study, the on-site surveys and the execution plans.
- ▲ Item C.4: the detailed study for the installation of the cabling connecting the CIE to the repeater panels and management stations, etc.
- ▲ Item C.5: Freeing of space for the installation of new CIE systems, including all fittings, assembly/dismantling accessories, studies, plans, etc. Provision and installation of new CIE + power + batteries + modem + printer + keypads + CPUs + entry cards + exit cards + relays, including all connection and installation accessories.
- ▲ Item C.6: the supply and installation of the equipment for the new fire detection system (supplies, handling, positioning, assembly, connections).
- ▲ Item C.7: the installation of an aspirating smoke detection system in the raised floors in certain areas of the building.
- ▲ Item C.8: the installation of a set of four management stations.
- ▲ Items C.9 and C.10: the removal of two servomechanism control units (document transportation and communication).
- ▲ Item C.11: programming of the control units and of the components connected to those units.
- ▲ Item C.12: systematic looping of all detection lines.
- ▲ Item C.13: systematic looping of the siren circuits + installation of a short circuit isolator.
- ▲ Item C.14: commissioning, testing and monitoring of the equipment for the fire detection system (test report on all detectors and servomechanisms).
- ▲ Item C.15: acceptance of the entire system by an official body with regard to the proper functioning of the system and compliance with these technical specifications and with the documents supplied in the tender and during performance of the contract (certificate to be attached to the as-built file).
- ▲ Item C.16: comprehensive maintenance of the equipment replaced/upgraded during the work to replace the system up to the date of provisional acceptance.
- ▲ Item C.17: miscellaneous (training, as-built, drafting of operations manuals, withdrawal of the comments made at the time of provisional acceptance, etc.).

The aforementioned items in the bill of quantities will include the costs relating to:

- the opening up of the suspended ceilings/raised floors,
- services in connection with preparations for provisional acceptance,
- services in connection with preparations for final acceptance,
- miscellaneous work such as:
  - scoring, perforations,
  - means of access,
  - the task of bringing in the equipment.

The following will be excluded from the scope of this contract (work for which the GSC is responsible and which will be carried out by the GSC's contractors):

- ▲ the closure of the suspended ceilings and raised floors,
- ▲ the closure and tightening of the fire-resistant seals.

The project does, however, cover the coordination of all such work.

### **3.3. Details of the various items**

#### **3.3.1. Item C.1. - Dismantling and removal of the existing system**

The services covered by this item relate to the dismantling, in accordance with the schedule, of all the following items of equipment in the existing system:

- eight fire detection control units
- eight alarm control units
- five servomechanism control units
- seven repeater panels
- four 'fire brigade' repeater panels
- four management systems (WIZCON)
- The fire detectors and manual push-buttons
- The data acquisition modules ('digital input')
- The servomechanism control modules ('digital output')
- The empty detector bases
- Seven Beam detectors (five in the Conference section and two in the tunnels)
- The alarm push-buttons
- Any unused cabling
- The supports and accessories used to connect the dismantled equipment

This item also includes the placing of such waste in a container. The container will be made available to the contractor by the GSC, which will be responsible for disposing of the waste.

#### **3.3.2. Item C.2. - Dismantling and removal of the ionisation detectors**

The services covered by this item relate to the dismantling and removal, in accordance with the schedule, of all the system's ionisation detectors. Item C.2. will include the costs relating to such services, which will comply with the Decree of the Belgian Federal Agency for Nuclear Control of 30 March 2009 'laying down the conditions for the disposal of ionisation smoke detectors taken out of use'.

### **3.3.3. Item C.3. - Detailed studies, on-site surveys, execution plans, schedules and reports**

The services covered by this item will include all the costs relating to:

- the detailed studies necessary for drawing up the detailed schedule (cf. 3.1.2.)
- the monitoring and updating of that schedule
- on-site surveys of the suspended ceilings/raised floors/ambient conditions
- site meetings/studies
- regular reports
- the drafting of the execution plans to be submitted prior to execution
- calculation of the autonomy of the control units
- calculation of the cable cross-sections
- coordination with the internal services
- calculation of the air duct network for the aspirating smoke detection system
- factory acceptance of a CIE

### **3.3.4. Item C.4. - Detailed studies for the interconnection of the CIE systems, repeaters and management stations**

The services covered by this item will include all the costs relating to the detailed studies necessary for setting up a cabling scheme between the CIE, the repeaters and the management stations. This item will lead to the submission of a report giving precise details of the cabling (type of cable) to be installed by the GSC for the future connection of the new equipment. This study will take account of the lengths of cabling between the various sites.

This item will also include any assistance provided to the contractor at meetings concerning the installation of those connections.

### **3.3.5. Item C.5. - Adaptation of the current CIE to accommodate the new CIE**

This item will cover all the costs relating to the requirement to keep both installations in operation in parallel for the entire duration of the works. The new control units must therefore be installed in such a way as to achieve maximum efficiency. The method proposed in that connection is that described in point 3.6.1. Another method could be proposed during execution of the contract; if such a method differs from what is described in point 3.6.1., it will be the subject of a detailed proposal setting out both the advantages and the disadvantages. However, the GSC reserves the right to impose the method described in point 3.6.1.

Prior to execution, the contractor will submit a clear and detailed plan of the CIE for approval.

### **3.3.6. Item C.6. - Delivery, installation and connection of the new equipment**

This item covers all the costs relating to the supply, installation and connection of the new equipment. Such equipment:

- will be installed in such a way as to comply with the contractual schedule set out in Appendix 8,
- will comply with the technical and prescriptive requirements set out in point 3.7,
- will satisfy the standards and obligations currently in force.

This item includes in particular the replacement of the existing system in accordance with the following principles:

- same physical locations for the CIE
- each CIE may be replaced by a maximum of two CIE depending on:
  - the current connections (cf. Appendix 4)
  - the requirements imposed by looping (cf. items C.12 and C.13)
  - the reserves required for the extensions (cf. 3.4.)
  - the technical feasibilities of the equipment proposed by the contractor

- removal of two servomechanism control units (cf. items C.9 and C.10)
- systematic replacement of the detectors, beamers and manual push-buttons
- systematic replacement of the public address and alarm repeater panels
- systematic replacement of the digital input and control modules
- maintenance of the programming and servomechanism programming logic (cf. Appendix 3)
- the ionisation detectors will be systematically replaced by multi-criteria detectors (cf. 3.7.5.4.).
- preservation of the audible warning devices and flashing beacons
- preservation of the existing power supplies
- preservation of the fire door closers; however, the power supplies are to be provided by the CIE

The cabling for the fire detectors and the audible and optical warning devices may be preserved provided that it is compatible with the equipment in the new system (types and cross-sections of the cables, autonomy of supply, voltage reduction, number of threads in the cable, length of cable, etc.). If this is not the case, the contractor will include in its tender price the replacement of the cabling in order to bring it into line with the requirements of the new installation. The GSC accepts the fact that the existing cabling does not comply with Article 104 of the General Regulations on electrical installations.

For information, the current cabling consists of two-pair or three-pair TPVF.

However, there will be systematic looping of the detection and warning cables (cf. items C.12 and C.13).

N.B.: the fire door closers will be supplied with power from the detection control units. However, in order to avoid placing too great a strain on the battery autonomy of the control units, the doors may be released after 15 minutes on battery power in the event of a power cut.

### **3.3.7. Item C.7. - Delivery, installation and connection of the aspirating smoke detection system**

This item includes the addition of new aspirating smoke detection systems covering new zones, together with the associated programming and corresponding servomechanisms for the suspended ceilings in the corridors in zones 70 CD, 50 ABD, 50 AC, 35 ABD, 35 CD, 35 AC, 20 ABD, 20 CD and 20 AC of the conference section (CO) (cf. Appendix 1).

The system must be installed in accordance with standard NBN S21-100-1. It consists of a sampling chamber containing a fire detector, a readily replaceable heavy-duty fan to draw in air, a programming unit (to control flows and anomalies), a network of air intake pipes and all the accessories required for connecting the system.

The entire aspirating smoke detection system is connected to the corresponding CIE; there is no interface module.

The plans supplied in Appendix 5 provide information concerning the physical location of the control units and the piping.

### **3.3.8. Item C.8. - Installation of management stations**

This item includes the installation of four management stations (10CDI, 60CCT, 00CG, CDS plant room) to be fitted out as follows:

- 10CDI: One master workstation including one 24" screen + one real-time printer + one colour laser printer
- 60CCT: One workstation including one 24" screen + one colour laser printer
- 00CG: One workstation including one 24" screen + one colour laser printer
- CDS plant room: One workstation including one 24" screen + one colour laser printer

The software used for those servers/stations and the hardware characteristics of the equipment must satisfy the requirements set out in point 3.7.9.



### **3.3.9. See point 3.3.10.**

### **3.3.10. Items C.9. and C.10. - Removal of two servomechanism control units**

There is no longer a need for the document transportation and communication servomechanism control units. Thus:

- they must be removed and not replaced,
- the servomechanism wires must be connected to a terminal block,
- the programming of all CIE must be adapted.

Items C.9. and C.10. will include the costs related to this work.

### **3.3.11. Item C.11. - Programming**

The programming of all equipment and servomechanisms will be retained in full (see Appendix 3).

Item C.11. will include the full cost of programming the CIE.

### **3.3.12. Item C.12. - Looping of the detection lines**

This item includes costs related to the looping of all detection lines by the addition of a new FR2 cable compliant with standards NBN S21-100-1 and -2 and Article 104 of the General Regulations on Electrical Installations to loop each detection line (connection of the final component of the detection line to the corresponding new CIE). Each existing detection line will become a loop. The route taken by this cable will be different from the route taken at the beginning of the loop. Warning: the linking of two or more existing lines to make one single loop is not permitted.

The cables will be installed along the same routes as the existing cables and/or inside a metal tube; where the cables pass through internal walls a sheath must be provided. The GSC will be notified of the absence of any fire-resistant seals so that it can arrange for the work to be carried out.

Appendix 6 sets out, by control unit and by line, the estimated cable length necessary for looping to be carried out.

### **3.3.13. Item C.13. - Looping of the siren lines**

This item includes the costs related to the following modification of the system:

- looping of all siren lines / (retained) flash lamps by adding a new FR2 cable compliant with Standards NBN S21-100-1 and -2 and Article 104 of the General Regulations on Electrical Installations to loop each line (connection of the final component of the siren line to the corresponding new CIE). Each existing siren line will become a loop. The route taken by this cable will be different from the route taken at the beginning of the loop. Warning: the linking of two or more existing lines to make one single loop is not permitted.
- installation of a short circuit isolator in each warning device / flash lamp, which must be built into the existing base; alternatively, the latter must be replaced by a base with an integrated isolator or an isolator installed in the immediate vicinity of the siren in housing.

Appendix 6 sets out, by control unit and by line, the estimated cable length necessary for looping to be carried out.

### **3.3.14. Item C.14. - Commissioning, testing and inspection**

This item includes the commissioning, testing and inspection of the system in accordance with Chapters 8 and 9 of Standard NBN S21-100-1. The inspections will be carried out following the commissioning of each CIE. A general inspection and tests will be carried out upon completion of the works.

### **3.3.15. Item C.15. - Acceptance by an inspection body**

Upon the replacement of each CIE, an official inspection body will certify the proper functioning of the system.

An official inspection body will certify the proper functioning of the whole system.

These reports must not contain comments and must be included in the 'as-built' file.

### **3.3.16. Item C.16. - Comprehensive maintenance of the upgraded equipment**

This item includes the comprehensive maintenance of the new systems in accordance with the requirements set out in Part D until their provisional acceptance I.

### **3.3.17. Item C.17. - Miscellaneous**

This item includes the following:

- training of operators: Five eight-hour training days in either French or English
- delivery of the 'as-builts' in accordance with the provisions of Chapter 8 of Standard NBN S21-100-1
- drafting of the operator manuals in FR/NL/EN
- submission of the AutoCAD implementation plans with a separate layer for fire detection.

### **3.3.18. Specific norms**

- ▲ Standards NBN S21-100-1 and -2.
- ▲ The entire series of standards EN54-2 to EN54-31.
- ▲ The General Regulations on Industrial Safety (RGPT).
- ▲ The General Regulations on Electrical Installations (RGIE) (Royal Decree of 10 March 1981 including the implementing or amending Royal Decrees and Ministerial Decrees).
- ▲ The standards, requirements and codes of good practice published by the Belgian Standards Institute and the Belgian Electrotechnical Committee and/or European standards.
- ▲ The requirements of the Royal Decree of 25 January 2001 on temporary or mobile construction sites.
- ▲ Application of the Royal Decree of 12 July 2012 amending the Royal Decree of 7 July 1994 fixing the basic standards in the area of fire and explosion prevention, with which new buildings must comply, including Annexes 1, 4, 5 and 7 thereto.
- ▲ The police regulations and the regulations of the Fire Brigade and Emergency Medical Service (SIAMU) of the Brussels conurbation.
- ▲ The European directives on LV (low voltage) equipment and particularly on CE marking, CE documentation and declarations of conformity.
- ▲ The ministerial decrees and/or circulars supplementing or amending the norms set out above.
- ▲ The documents specified in these tender specifications.

In the event of divergences or contradictions between the documents, the most stringent provisions will prevail.



### **3.3.19. Good practice**

A number of details that the installer is presumed to be aware of, on the basis that they constitute good practice and are habitually present in the installer's profession, have been omitted from the plans and from these tender specifications. In any event, it is expressly agreed that the work will be carried out in accordance with all best practices, with taste and regard for aesthetics, and that the installer has checked that he is able to assume full liability for guaranteeing the proper performance of the works and the perfect working order of the systems.

The GSC draws the attention of the contractor to the particular care to be taken in relation to:

- the wiring, and more specifically the connection between the rigid cables and the electronic cards, the numbering and wording on the cables, detectors, air intake pipes, etc.
- the equipotential connections and the earthing of all the grounds of the new equipment and accessories, including the wiring ducts, bases, etc.
- fire-resistant seals do not fall within the scope of this contract, however, the contractor is obliged to notify the GSC of any fire-resistant seals that need to be fitted
- the fixing of final elements, in accordance with the technical requirements of the manufacturers.

### **3.3.20. Means of access / tools**

This item includes all means of access, such as fixed ladders, stairs, floorboards, etc. necessary for reaching the apparatus.

## **3.4. Accuracy and precision of the description of the existing system**

The existing system is permanently adapting / evolving due to various ongoing and future projects, and the adjustment of the zones in the building. This means that the contractor will also be responsible for verifying all information and elements set out in this Annex, particularly programming and servomechanisms.

These services are included in Item B.17.

## **3.5. Evolution / expansion (see Appendix 10)**

The system as a whole will allow a possible expansion through the addition of a minimum of 20 % devices installed on a line (detector, manual push button, siren, IN/OUT module, indication etc

*The tenderer will set out the possibilities for extension in its tender.*

*Following acceptance of the tender, this proposal will be annexed as Appendix 10.<sup>4</sup>*

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<sup>4</sup> See Annex II to the tender specifications ('Demonstration of conformity with the tender specifications - Minimum requirements - List of documents to be supplied').

### 3.6. Phasing of works

#### 3.6.1. PHASE 1 - Physical installation of new CIE (public address, servomechanism and alarm)

The existing CIE is installed:

- a) in the plant rooms or
- b) in the alcoves located in the passageways.

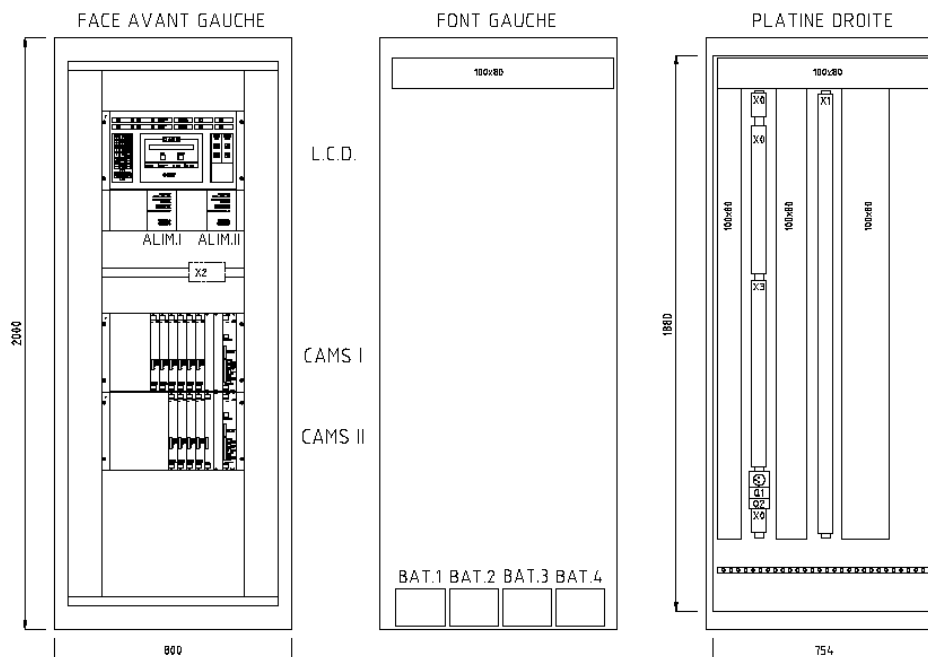
a) The CIE master fire detection control unit and the master alarm control unit in plant room CO10 (see Appendix 2) are comprised of 19" racks with equipment on the door and at the bottom of the rack.

The racks may not be rearranged to create space for future control units, and therefore will remain in their current position until the non-functioning equipment is dismantled.

The new CIE will be placed in the same plant room, next to the existing one.

b) The CIE installed in the alcoves in the corridors will be installed in two 19" racks arranged as follows:  
The right-hand rack will contain several terminal blocks placed at the bottom of the rack; the door of this rack will not contain any elements.

The left-hand rack will contain the CIE (electronic cards, displays, etc.), to be fixed to the door of the rack; the bottom of the rack will contain only a conduit for cables; the batteries will be placed in the lower section of the rack.



The new CIE will be put in the same place as the existing CIE.

The objective is therefore to create a rack space in which to install the future (CIE) control unit; to achieve this, it is necessary to:

- Remove and dispose of the door of the right-hand rack containing no equipment.
- Dismantle the door of the left-hand rack and place it on the right-hand rack, taking care to keep the cabling intact.

■  
Since the right-hand rack is not sufficiently deep for the door of the left-hand rack to be securely placed on it, the contractor will add the supports required to the right-hand rack to ensure that the whole structure is firmly attached.

The contractor will be responsible for:

- delivery of all rack assembly and fastening accessories,
- the dismantlement and disposal of the empty rack,
- movement of the cables, conduits and the battery powering the CIE
- the electrical connections of the CIE
- the connection of those control units' interconnecting cables.

The rack with the existing (CIE) control unit will be kept in place until the whole of the new system is functional. Following which the contractor will dismantle and dispose of the existing part, including the rack, terminal, unused cables, etc.

### **3.6.2. PHASE 2 - Installing the management stations and repeater panels**

The public address and 'fire brigade' repeater panels will be installed, wired and connected to the system. The (four) management stations will also be installed, wired and connected.

The installation of the connection between the CIE / repeater panels / management stations falls outside the scope of this contract and will be carried out by the GSC on the basis of the contractor's technical specifications.

### **3.6.3. PHASE 3 - Wiring of the fire brigade servomechanisms on the two systems**

To guarantee the upkeep of the vital servomechanisms (fire brigade panels), the contractor will wire the servomechanisms on both systems. It will therefore be possible to control one fire brigade panel servomechanism using two different CIE.

These cabling modifications will be fully identified in the detailed schedule and organised outside of normal working hours (see 1.6 of Part A).

### **3.6.4. PHASE 4 - Programming of the management stations**

The management stations, including graphical views, will be programmed and commissioned in order to be operationally ready during the switching stages.

### **3.6.5. PHASE 5 - Programming of control units (public address, servomechanism and alarm) and testing via a simulator**

All CIE (public address, servomechanism and alarm) will be programmed so as to be able to accommodate the future terminal equipment.

Given the complexity and size of the system, the contractor will provide for a simulator to check and test the programming before registering it in the new CIE, simulating the corresponding servomechanisms and their reactions, and confirming the compatibility of the system as a whole.

The integration of the fire detection system on the simulator must also allow for the training of operators.

All services required for the configuration and commissioning of the simulator will be included in the price of item C.11. including hardware, printers, bench test, adaptation of plans and diagrams, software licence, etc.

**Phase 5 will result in:**

- for the public address and alarm control units, a complete, managed, programmed and tested system that is not connected to the terminal equipment,**
- for the servomechanism control units, a fully operational system.**

*The tenderer will attach to its tender (Appendix 11) the proposed detailed methodology for phases 1, 2, 3, 4 and 5 to ensure the proper execution of the subsequent stages. The tenderer is free to propose variants here if the results and objectives are guaranteed.*

*In the event of the contract being awarded, this proposal will become contractually binding and will be attached as Appendix 11.<sup>5</sup>*

### **3.6.6. PHASE 6 - Public address system**

The phasing of works in phase 6 is provided for information purposes only and must be completed, adapted and corrected by the contractor. The contractor may propose an alternative to the phasing of works, to be approved by the GSC in accordance with the timetable set out in Appendix 8.

The phasing of works for phase 6 is as follows:

- Line looping: supply and placing of FR2 cables between the last detector in the detection line and the new CIE.
- Line by line: replacement of terminal equipment (detectors, manual push buttons, line detectors using an optical beam, equipped output modules, input modules, etc.).
- Switching of the new line and looping of the new line onto the new CIE control unit.
- Operational testing of the new line (loop) on the CIE outside the normal framework hours: verification of output modules, 'fire brigade' control panels, communication between repeaters and manager.

When a full set of CIE has been switched, the contractor must arrange for:

- acceptance by an official inspection body that it is in proper working order;
- the removal of the old CIE
- the updating of the plans and files
- the final installation of the new CIE
- the removal of the double wiring of the fire brigade servomechanisms (see phase 3).

### **3.6.7. PHASE 7 - Alarm system**

The phasing of works for phase 7 is as follows:

- Looping of the alarm system lines: supply and installation of FR2 cables between the last warning device (siren or flashing beacon) on the alarm line and the new CIE.
- - The cables should be placed in the existing wiring ducts and/or in metallic tubing. Provision must be made for a sheath through the internal walls.
  - Any lack of a fire-resistant seal must be drawn to the GSC's attention so that it can have the work carried out.
  - The cable and its support must be fire-resistant (FR2).

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<sup>5</sup> See Annex II to the tender specifications ('Demonstration of conformity with the tender specifications - Minimum requirements - List of documents to be supplied').

- Addition of a short-circuit isolator for each siren: -  
the isolator must be built into the existing base  
or  
- the existing base must be replaced with a base with a built-in isolator or  
- the isolator must be built into housing placed nearby.
- Switching of the new line and looping of the new line on to the new CIE control unit.
- Operational testing of the new line (loop) on the CIE outside the normal framework hours: verification of proper functioning, communication between repeaters and manager.

When a full set of CIE has been switched, the contractor must arrange for:

- acceptance by an official inspection body that it is in proper working order
- the removal of the old CIE;
- the updating of the plans and dossiers;
- the final installation of the new CIE.

### **3.6.8. PHASE 8 - Vacuum detection system**

In certain parts of the building's raised flooring aspirating smoke detectors must be installed, put into operation and linked up to the address system.

### **3.6.9. PHASE 9 - Provisional acceptance of the system**

Two weeks before the provisional acceptance of the installation the contractor must supply, in AutoCAD, Word or Excel format (software versions to be requested from the GSC), the technical dossier containing:

- the implementation plans, approved by an official body, covering the detectors and manual push buttons, identifying the loops and the zones, and setting out the layout of the cabling;
- the inspection report for phases 6, 7 and 8 without the official body's comments;
- the single-line diagrams;
- the detailed connection diagrams for the control units and distributors;
- the technical data sheets for the equipment installed;
- the details of all the address messages on paper and in digital format;
- the cause and effect programming on paper and in digital format;
- the certificate of conformity stating that the system complies with the requirements of the official body or its equivalent at European level, in line with the competence criteria corresponding to the requirements in force, including the EC certificate for the materials used;
- a list of all the detectors indicating the analogue value determining sensitivity on the date of provisional acceptance.

The provisional acceptance tests must be carried out at the weekend (two working days: Saturday and Sunday) and cover:

1) Address and servomechanism control units

- detection test (simple or double detection according to area) for each fire-break zone;
- verification that the local servomechanisms are properly placed;
- verification that information is properly communicated to the fire brigade panels via the servomechanism control units. However, actual commands are inhibited so as not to slow down the tests too much.

2) Alarm control units

- zone-by-zone siren trigger test.

3) Validation of the as-built files

4) Verification that there are no comments in the acceptance reports from the inspection bodies

5) Verification that all important comments recorded during the previous phases have been removed

Provisional acceptance will be granted by the GSC if all the above verifications are validated.

**3.6.10. PHASE 10 - Withdrawal of observations made at the time of provisional acceptance**

Within nine months of the date of provisional acceptance, the contractor and the GSC will verify the withdrawal of the observations made in the provisional acceptance report. Failure to comply may result in a penalty in accordance with point 1.11.12.

**3.7. Technical requirements for the equipment**

**3.7.1. General remarks**

**3.7.1.1. Compliance with standards**

The equipment used (fire detectors, CIE, manual push buttons, bases, entry/exit interface, etc.) must come from a sole supplier-manufacturer so as to form an integrated system that offers maximum reliability and compatibility.

The proposed equipment and its compatibility must be certified by an official body.

This certification body must have the relevant business certification and be accredited in accordance with NBN EN 45011:1998 or with ISO 17065 by an accreditation institution which has signed the European Cooperation for Accreditation'(EA) Multilateral Agreement (MLA).

The tenderer must attach to its tender the necessary certificates regarding the compatibility of the equipment (Appendices 12 and 13):

- Certification of conformity of the CIE components with standard EN 54-13 (detectors/manual push buttons/repeater panels/line detectors using an optical beam/aspirating smoke detection system and IN/OUT modules),
- EN 54-2 and EN 54-4 certification and technical data sheets for CIE,
- EN 54-5 certification and technical data sheets for heat detectors,
- EN 54-7 certification and technical data sheets for smoke detectors,
- EN 54-12 certification and technical data sheets for line detectors using an optical beam,
- EN 54-17 certification and technical data sheets for isolators,
- EN 54-20 certification and technical data sheets for the aspirating smoke detection system,
- EN 54-29 or CEA 4021 certification and technical data sheets for multi-criteria detectors,
- EN 54-11 certification and technical data sheets for manual push buttons,
- EN 54-18 certification and technical data sheets for IN/OUT modules,
- EN 54-27 certification and technical data sheets for aspirating smoke detectors,

- technical data sheets for detector bases and management,
- explanatory sheet for the isolation and adaptation of the sounder lines (3.3.13 of Part C)
- certification of availability for spare parts for a period of at least 15 years following the provisional acceptance date for the systems.<sup>6</sup>

#### 3.7.1.2. Addressability

All the new fire detection equipment (fire detectors, manual push buttons, in/out module, etc.) must be addressable.

#### 3.7.1.3. Cabling

- All the new cables must be compliant with the General Regulations on Electrical Installations (RGIE) and NBN S21-100-1 and 2.
- The existing cabling for the fire detection equipment (detectors, in/out module, manual push buttons, sirens) may be retained. If the cabling is not compatible with the proposed new equipment, the contractor must include the replacement cabling in the unit prices in part C and must specify in detail in Appendix 11 the type of cables, the way in which they will be laid and the supports it will put in place. *The tenderer must explicitly state this in its tender. In the event of the contract being awarded, this proposal will become contractually binding and will be attached as Appendix 11.*

The installation of a connection between the CIE/repeaters/management stations does not form part of this contract; it will be carried out by the GSC on the basis of the contractor's technical specifications (see point 3.6.2).

#### 3.7.1.4. Reliability

All devices must demonstrate maximum reliability. To that end every precaution must be taken to:

- reduce to the absolute minimum the number of possible breakdowns and incidents; only components which are protected from ageing may be used.
- facilitate inspection of all the connections and all parts of the control units without exception; in addition, all keys must be unique, universal and all-purpose for all of this company's devices.
- enable swift repairs by using a system of interchangeable modules.
- enable future modifications and extensions to be made without technical difficulties by using system programming in the detectors and control units throughout the entire system.
- ensure that the installation of the fire detection system is not the reason for a significant number of false alarms attributable to the system itself (see reliability obligation in point 4.4.13 of Part D).

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<sup>6</sup> See Annex II to the tender specifications ('Demonstration of conformity with the tender specifications - Minimum requirements - List of documents to be supplied').



### **3.7.2. Common characteristics for integration into the future BMS (Building Management System)**

Each CIE component must have an interface for a two-way connection with the management system via Ethernet and must use the standard communication protocol for building automation and the BACnet Life Safety object control network.

When the future management system is in place, at least the following functionalities linked to the fire alarm system must be possible:

- Accepting the alarms and reinitialising them element by element.
- Activating/deactivating the detection zones.
- Testing the detection zones/excluding them from testing.
- Activating entries/exits and commands.

### **3.7.3. Control and indicating equipment (CIE)**

#### **3.7.3.1. Description**

The control and indicating equipment (CIE) complies with standards NBN EN 54-2, NBN EN 54-4 and NBN S21-100-1 and 2.

The CIE comprises all the electrotechnical equipment required for the smooth operation of the systems connected to it.

The components, the cabling and the cable troughs must be halogen-free.

Indications and commands are given by an indicating and command terminal.

The essential functions to be performed by each CIE component include:

- Centralising all the information coming from an automatic and/or manual detection (alert).
- Transferring all this information from the control unit to the different data processing levels:
  - ▼ to the repeater panels;
  - ▼ to other control units;
  - ▼ to the management system.
- Ensuring different alert levels.
- Executing servomechanism and command programs.
- Ensuring a very low-voltage supply – 24 VDC – to all the devices that make up the system even in the event of an accidental disconnection from the electrical supply network.

The specific functions to be performed by the indicating and display terminal are:

- Displaying all alert information coming from the CIE, in terms of the line, the zone and the element.
- Displaying all the installation's operating faults.

A fire alarm signal has priority over all other signals.

Restarting the control unit after a fire alarm deactivates the optical alert indicators and resets all the control unit's devices. Default acoustic announcements already made before the alert is triggered must not be reactivated after a fire alert has been put back to zero.



### 3.7.3.2. Composition

The new CIE must be a 19-inch rack unit or it may be installed in a sturdily built 19-inch rack surround that makes it possible to see the signals without opening the door. It must be fitted with a key-locking system.

The cupboard must be of a size that enables it to incorporate existing lines and ensure that they are looped, with a future extension possibility of at least 20 % of the line elements.

The public address and alarm CIE must have at least the following capacities:

<b>CIE</b>	<b>Loop number</b>	<b>Number of addressable line elements</b>
CDI-B1	70	1594 + 20%
CDI-C1	54	987 + 20%
CDI-D1	67	1344 + 20%
CDI-G1	61	1376 + 20%
CDI-H1	60	1504 + 20%
CDI-L1	47	1067 + 20%
CDI-M1	55	1351 + 20%
CAL-B1	19	Min 256
CAL-C1	13	Min 256
CAL-D1	18	Min 256
CAL-G1	10	Min 256
CAL-H1	15	Min 256
CAL-L1	13	Min 256
CAL-M1	13	Min 256
CAL-MASTER	8	Min 256
CDI - MASTER	2	Min 256

The capacity of each existing CIE component is given in Appendix 4.

Given the capacity of the existing CIE (number of loops and elements connected to the control unit), each existing CIE component may be replaced by a maximum of two control panels only.

*The tenderer must attach to its tender a proposal for a block diagram showing the different CIE components, their location, the manager, the management stations and the repeater panels.*

*If the contract is awarded, these block diagrams must be incorporated into Appendix 14 of this Annex.<sup>7</sup>*

The total capacity of the fire network in the JL building is approximately 10 000 addressable elements.

Each CIE component must comprise a single display (control panel), form a single unit certified under EN 54-2 and EN 54-4, and comply with Article 6.2.2.2.1 of NBN S21-100-1.

Each CIE component must be able to function autonomously within its zone in case of a loss of communication with the other CIE.

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<sup>7</sup> See Annex II to the tender specifications ('Demonstration of conformity with the tender specifications - Minimum requirements - List of documents to be supplied').

### 3.7.3.3. Control panel

For the different commands and information displays, the terminal must include an alphanumeric keypad and a single backlit screen integrated into the CIE. The information must be automatically displayed in chronological order according to urgency (the alert has priority by default).

Commands must not be located inside the control unit if they cannot be accessed from the control panel.

The control panel must enable the user to give commands to the control unit and, by means of a password, to read the control unit's memory, modify certain thresholds and carry out more advanced commands (line isolation, isolation of one or more fire detectors, remote testing, etc.).

### 3.7.3.4. Programming principle

The programming for the existing CIE (see Appendix 3) must be preserved in full and transferred to the new CIE.

### 3.7.3.5. Power

Each CIE component must supply power to all internal equipment and all connected equipment, with the exception of remote supply.

The operating voltage must be guaranteed through the normal/emergency distribution network (230 VAC with 300 mA RCD) and, if the network fails, by the CIE's batteries.

The elements, chargers and batteries must be integrated into the control units and mounted in a separate compartment from the rest of the equipment.

#### 24 VDC compartment

The 24 VDC compartment must provide power and protection for the connected elements.

The compartment must essentially comprise three parts:

- one part with all the protection devices for all the circuits;
- a charger-rectifier unit;
- the batteries.

The batteries and the loads must be connected in parallel to the charger-rectifier output.

The rectifier must simultaneously supply power to the users while charging the batteries.

In the event that the network supplying the rectifier is disconnected, the batteries must take over and supply power to the loads. This transfer must occur without interruption.

When the power supply network is restored, the charger must once again supply power to the loads and recharge the batteries. Batteries must be able to be charged to 80 % of their capacity after a period of ten hours.

The batteries must be sealed and maintenance-free, and have a life-cycle of at least ten years.

- Capacity: the capacity of each battery must be determined and justified by the contractor so as to meet the following criteria:
  - Operating life of no less than twelve hours on standby and two hours in an alarm state.
  - Capacity of the battery determined according to NBN S21-100-1 by applying the formula:  
 $C_{nom} = 1.25 (A1 \times t1 + A2 \times t2)$ , whereby:  
A1 = Inom in normal state (standby)  
A2 = Inom in alarm state  
t1 = minimum twelve hours  
t2 = minimum two hours

The contractor's attention is drawn to the fact that the fire doors require battery power for only 15 minutes. After this period, they will be released.

Any anomaly in the rectifier/charger must be reported to the CIE in accordance with EN 54-2 and 4.

### **3.7.4. Repeater panels**

The repeater panels are back-up equipment for the CIE. They must comply with standards EN 54-2 and 54-4 and be compatible with the CIE.

They must make it possible to view the state of the system in the different zones that they monitor.

The indications must be analogue. The repeater panel must have an electronic warning device on it which will function in the event of a fire alert. If necessary and depending on the situation, it must be possible to activate/deactivate this warning remotely (from the manager).

The repeater panels must be connected to the fire detection network via the master CIE. Data must be transmitted via an interface with a processor and memory.

### **3.7.5. Detectors and manual push buttons**

#### **3.7.5.1. Characteristics common to all the detectors**

All the detectors must comply with European standard EN 54.

The detectors must be labelled with the name of the original manufacturer, the European approval number, the type number and the most recent inspection date.

The detectors must operate at the same DC voltage as the CIE.

Each detector must comprise two separable elements:

- the mounting base;
- the detector itself (detector head); the different types of heads must be interchangeable.

Each detector must carry out continuous monitoring and be able to transmit three types of information to the CIE: surveillance, announcements, malfunctions.

The detectors must not contain any radioactive sources, no matter how low-level.

The detectors must not contain any jointed parts, any internal electrical contacts that operate in air, any liquid elements, or any deformable membrane. There must be no relays incorporated into the detector element.

The detectors must not contain any part that could oxidise, rust, or become altered under normal temperature and humidity conditions in the areas in which they are installed.

The removal of a detector from its base must trigger a malfunction indication to the corresponding CIE.

This indication must be unique to the line to which the detector is connected and must not under any circumstances influence the indications on the other circuits.

The acoustic indication must be made by an electronic buzzer incorporated into the detection control unit. It must be possible to stop the acoustic signal without disrupting the optical indication.

The detector must include an individual light to indicate operational status which must have at least 180° visibility along the horizontal field.

The detectors must not be susceptible to disruption as a result of ageing and must not contain any parts that could oxidise.

The detector must be designed in such a way that third parties cannot open it and access the components without using special tools.

To enable the detection system to be adapted, spatially and over time, to the nature of the risks to be protected against, individual fire detectors must be interchangeable on the same universal base without any modification other than reprogramming the detectors and central control units.

The detectors must maintain the alert indication until it is cancelled manually on the central fire detection control panel. They must then automatically revert to surveillance mode.

The detectors must be equipped with an electronic address unit enabling the control panel to identify them. No DIP selector, wheel or other mechanical elements in the detector or its base.

It must be possible to isolate a faulty detector or manual push-button using the keypad, without deactivating the other detectors/manual push-buttons in the network.

Each component of the network (detector, manual alert push-button, IN/OUT module, etc.) must be of the analogue addressable type and equipped with a short-circuit isolator (incorporated into the component).

The short-circuit isolators used must comply with the EN 54-17 standard.

Each fire detector, as well as possessing its own address, must be adjustable for sensitivity.

In addition to sensitivity, interactivity must make it possible to individually determine the degree of clogging and make certain adjustments, to call up the history of each component and to regulate the sensitivity of a detector in an hourly or day/night cycle to avoid burdensome operating phenomena.

Any line disconnection, short-circuit or earthing must be immediately isolated and signalled.

The rest of the components must continue to function normally.

Existing detection lines must be systematically cabled in a loop.

#### 3.7.5.2. Optical smoke detector

The detectors must comply with the NBN EN 54-7 and NBN EN 54-17 standards.

The smoke detectors must respond to smouldering fires producing visible, light-coloured or dark smoke.

The detectors must function on the Tyndall light refraction principle. To ensure maximum reliability, a luminescent diode emitting infrared radiation must be used as a light source, and a silicon cell as a receptor.

Sensitivity must be kept constant by compensating for drift so as to ensure optimum functioning.

A system to protect against the entry of ambient light and dust must be incorporated as an original component of the detectors.

The minimum technical characteristics must be:

Operating conditions:	-10°C to +60°C
Supply voltage:	voltage of the CIE;
Protection rating:	as required for the installation site.

#### 3.7.5.3. Heat detectors

The detectors must comply with the NBN EN 54-5 and NBN EN 54-17 standards.

They must respond to open fires producing flames and strong heat.

They must have a dual functionality:

- Thermodifferential: with a class 1 response time in accordance with the EN 54-5 standard;
- Thermostatic: alert triggered at a temperature of no more than 58°C ( $\pm 3^\circ$ ).

Sensitivity must be kept constant by compensating for drift so as to ensure optimum functioning.

It must be possible to determine the sensitivity setting thresholds on the CIE.

#### 3.7.5.4. Multi-criteria detectors

The detectors must comply with the NBN EN 54-5, NBN EN 54-7, NBN EN 54-17 and NBN EN 54-29 or CEA4021 standards.

The detectors must be universal and respond to all fires:

- If there is only smoke (covered fires without flames);
- If there are only flames (open fires without smoke);
- If there is a combination of both the above.

To ensure this, this type of detector must have two light sources (emitting light to the front and behind) illuminating the smoke particles from different sides, so that the fire detector responds even better to light-coloured and dark smoke particles emitted from smouldering and open fires.

Multi-criteria detectors must contain several smoke sensors, and at least one combined heat sensor, in the same housing.

If one of the sensors (smoke or heat) malfunctions, it must automatically be isolated and the malfunction signalled to the terminal. The other sensor must continue to function for a possible alert.

The detectors must be fitted as standard with a system to protect against the entry of ambient light, dust and insects.

The detectors must permit sensitivity to be adjusted dynamically.

It must be possible to determine the sensitivity setting thresholds on the CIE.

All existing ionisation detectors must be replaced by these multi-criteria detectors.

#### 3.7.5.5. Detectors for ventilation ducts

These detectors must comply with the NBN EN 54-7, NBN EN 54-17 and NBN EN 54-27 standards.

They must consist of an analysis chamber, a base, an optical smoke detector, sampling tubes and a device for fastening the detector to the outer wall of the ventilation duct.

The analysis chamber will monitor the duct and collect the air sample which it feeds to the detector.

The housing of the analysis chamber must contain an air circulation chamber and a space reserved for the detector connection.

The detector's operating indicator light must be visible from the outside.

Sampling tubes must be available in several sizes (from a minimum of 45 to 150 cm).

#### 3.7.5.6. Detector bases

The bases must be of the universal type, mechanically compatible with all standard types of detector units and electrically compatible with detectors operating in the same mode.

They must enable the continuity of the transmission channel to be tested without the detector being in place. The base may be connected to the transmission channel by a screw or a spring.

The bases must also fulfil the same general specifications as the detectors concerning:

- certifications and
- environmental operating conditions,
- and must not contain parts which could oxidise, rust or deteriorate.

The bases or detectors must be equipped with a short-circuit isolator and, depending on the case, with a frame to be incorporated in a suspended ceiling or a surface frame which allows the cables to be installed so that they are visible.

The bases must be equipped with an identification plate enabling the associated detector to be located for ease of maintenance and identification. The type of labelling must be submitted to the GSC for approval.

The bases must be equipped with a device to lock the detector unit in place (anti-theft system).

The bases must be equipped with an outlet enabling a remote indicator to be connected.

#### 3.7.5.7. Beam-type linear smoke detectors

These detectors must comply with the NBN EN 54-12 standard.

Linear infrared beam detectors will be used to protect tall and open spaces.

The detectors may be of two types:

- Separate transmitter and receiver: the receiver will use electronic sensors to measure the darkening of the IR light beam emitted by the A3 class laser diodes in the transmitter, in accordance with the NBN EN 60825-1 standard.
- Transmitter and receiver in the same housing: the detectors will consist of two parts - a housing containing both the transmitter and the receiver, which handles signals and communication with the CIE, and a high-efficiency reflector. The size of these reflectors will depend on the distance which separates them from the receptor. The transmitter will produce an IR light beam. The beam will be reflected by the reflector and returned to the receiver.

Smoke entering the detection area will weaken the infrared signal. When the signal reaches a predefined sensitivity threshold, the detector will trigger an alert.

The detectors must be fastened to the walls, at least 50 cm from the ceiling.

The detectors must be equipped with an operating indicator light.

Linear detectors must also meet the following specifications:

- At least three possible sensitivity levels must be provided as standard.
- Automatic compensation for clogging.

The detectors must be labelled for ease of maintenance and identification. The type of labelling must be submitted to the GSC for approval.

These beams will be connected directly to the detector line, not via an interface or input module.

### 3.7.6. Vacuum detection system

Vacuum detection systems will mainly be used for detection in the spaces contained by part of the suspended ceilings in the Conference area of the Justus Lipsius building.

These detection systems must comply with the NBN EN 54-20 standard.

The contractor will be responsible for the complete design basis of the vacuum detection system (cross-section of the suction pipes, sampling points, filters, etc.)

These vacuum detection systems will be connected directly to the detector line, not via an interface or input module.

Vacuum detection is a technology used to detect smoke at an early stage in critical locations where aesthetic considerations are important and access to traditional sensors is difficult.

There are two main components:

- The vacuum smoke detector, consisting of:
  - o The detection module(s)
  - o The vacuum unit
  - o The flow rate control system and depressurisation device, consisting of a fan which draws in ambient air
  - o A filter
- Sampling tubes with air intake openings

The sampling tubes can be made of rigid PVC with an appropriate diameter (flow rate, pressure loss, etc.). The diameters of the tubes must be based on calculations and submitted to the GSC for approval.

The operating principle will be as follows:

The vacuum unit creates a vacuum and the ambient air in the area being monitored is channelled by the pipe network to the optical detection modules which check for the presence of smoke particles.

A system for processing the intelligent signal analyses the data measured and determines whether they correspond to the conditions indicating a fire. These conditions can be set by the user in the form of a percentage of opacity per metre.

The system's operation will be started, and parameters set, by dedicated software.

Several pre-alarm levels can be set by the user in order to adapt the monitoring thresholds to the risks affecting the premises.

The airflow through the detector will be monitored to detect leaks or obstructions in the sampling network.

A malfunction signal must be sent to the central control unit if the airflow is outside the operating parameters specified by the EN54-20 standard.

The detector will contain a mechanical filter to:

- Eliminate dust to ensure optimum smoke analysis
- Ensure that the detector unit is clean.

Unused inlets to the detector tubes must be hermetically sealed.

The system must possess the following minimum characteristics:

- Protection rating: min. IP30.
- Number of alert levels which can be set: min. two.
- Number of malfunction warning levels: min. two (maintenance and major incident).
- Number of vacuum pipes: one or two as appropriate.



Sampling network:

- Tube length: max. 100 m.
- Area covered: max. 2000 m<sup>2</sup>.
- Alert control range: 0.06 % obscuration / m.

The pipes in the sampling network must possess the following minimum characteristics:

- Compression resistance:  $\geq 125$  N.
- Outer diameter: 25 mm.
- Internal diameter: from 15 to 21 mm.
- Smooth and non-permeable.
- The material used to manufacture the pipes must not contain halogen.

The air intake openings must always face the pathway along which the smoke can be expected to travel.

The air intake pipe must be clearly labelled to indicate that it is part of a fire detection system. This labelling will take the form of identification labels attached to the pipes at regular intervals. If the pipe is concealed and not accessible along part of its length, an identification label must be placed as soon as the pipe is accessible again.

The detection systems must be labelled for ease of maintenance and identification. The type of labelling must be submitted to the GSC for approval.

The pipe network must include all accessories required for the proper performance of the works: sleeves, elbows, network end caps, offset intake points, clamps, etc.

The connecting joints in the air network must be glued and airtight, with the exception of the detector inlet, where airtightness will be ensured by a conical joint on the pipe.

### **Detectors**

The detectors in the vacuum systems will be contained in a closed hinge-mounted metal case. The case will also contain the vacuum fan, the device for monitoring the air duct network, the charger and batteries, the terminal block and the local indication equipment. The light indicator devices will be mounted on the front panel of the case.

The case will allow for easy access to and, when necessary, replacement of all the integrated components. The case must always contain a connected network detection component. The sensitivity level chosen for applications in suspended ceilings will be class C as specified in the EN54-20 standard.

#### **3.7.7. Manual call points**

The manual call points must comply with the NBN EN 54-11 standard.

The manual call points will trigger an alert manually in the same way as detectors do automatically.

They will be of the resettable press-glass type and equipped with an individual red LED operating indicator light.

The manual call points will be fitted with a colour-fast red front frame and carry a 'fire' symbol (flame) indicating their purpose. They will be either flush-mounted or surface-mounted, depending on the type of cabling required in the premises concerned.

They may, if required, be fitted with a transparent cover to protect the call point from being activated accidentally.

Manual call points, like detectors, will be addressable.

They will be connected to the CIE via a looped transmission channel.



Activating a manual call point will switch on the light on the case and lock it in key down- position.

Each manual call point will be supplied with one or more test keys for testing and resetting the call point.

Each key must work on all call points.

Each manual call point will contain a bidirectional short-circuit isolator. The short-circuit isolator must be incorporated in the button case.

The manual call points must be labelled for ease of maintenance and identification. The type of labelling must be submitted to the GSC for approval.

The manual call points may be semi-recessed or surface-mounted.

#### *Additional accessories*

The following additional accessories must be supplied as required:

- Resettable press-glass;
- Transparent protective cover;
- Test and reset keys.

### **3.7.8. IN/OUT modules**

The centralising of indication, servomechanisms and automatic commands will often be carried out via interface modules.

These modules will make it possible to:

- accept a potential-free contact created by another discipline which needs to be indicated as a fire alert by the equipment operating in this discipline (indication interface module);
- trigger a decentralised servomechanism via an integrated contact (made available by the discipline concerned) initiated by an order from the central control unit (command interface module).

Each module will have an address and a short-circuit isolator and be electrically compatible with all the detectors; this will enable each module to be inserted (like a detector) in a line of detectors or manual push-buttons. Each module will then be powered and monitored continuously from the CIE to which it is connected.

Characteristics:

- operating voltage: 24 VDC;
- permissible ambient temperature: -10°C to + 60°C;
- characteristics of the contact (240v-2A).

Existing interfaces must be replaced and cabled into the new system. These interfaces must comply with the EN 54-18 and EN 54-17 standards.

### **3.7.9. Management**

The management system will comprise

- one master control station on level 10CD (CDS plant room) in the Conference area of the JL building and
- three slave stations on level 10CD (Fire Control Centre - CDI) in the Conference area and on levels 00CG (Safety Unit) and 60DH (CCT / technical control centre) in the Secretariat area of the JL building.

On each management station it will be possible, by means of graphic representations (buildings, floors, wings - based on Autocad plans supplied by the GSC), to visualise and control each component or group of components in the system (activate/deactivate by component or group of components, start/end testing by component or group of components); to address (by optical and acoustic means), display, discharge and reset each alert individually; to display a list of events; to generate a tailored list of events, on request. The icons and colour codes used in the management system will be specified by the GSC. At least five different access levels must be defined. The system may have an unlimited number of users, all with their own password and access level.

Real-time printers will automatically print each event, alert, malfunction, activation/deactivation, start/end of test, etc., as defined by the GSC.

Colour laser printers will automatically print the intervention plans in the event of an alert or alarm. They can also, if specifically requested, be used to print the installation plans, or parts of them.

The master management station will receive:

- information from the master address control unit,
- information from the master servomechanism control unit,
- information from the master alarm control unit,
- information from the slave management stations.

The master management station will transmit:

- information to the master address control unit,
- information to the master servomechanism control unit,
- information to the master alarm control unit,
- information from the slave management stations.

The slave management station will receive:

- information from the master management station.

The slave management station will transmit:

- information to the master management station.

A number of additional commands will be possible from the management stations. These commands are as follows:

- releasing the evacuation doors in the Secretariat area,
- releasing the evacuation doors in the Conference area,
- closing the fire doors in the Secretariat area,
- closing the fire doors in the Conference area,
- closing the fire doors in the car park area,
- returning all lifts in the Secretariat area to the reference floor,
- returning all lifts in the Conference area to the reference floor,
- releasing the doors in the fire-lobbies between the Secretariat and Conference areas,
- releasing the doors in the fire-lobbies in the car parks in the Secretariat and Conference areas,
- controlling all sirens in the Secretariat area (evacuation of the building),
- controlling all sirens in the Conference area (evacuation of the building),

It will also be possible to deactivate each command, individually or by group.

Controlling the sirens in either area of the building (Conference or Secretariat) will automatically involve the operation of all sirens in the car parks in both areas.

Closing the fire doors in either area of the building will automatically release the doors in the fire-lobbies between the two areas.

## **4. PART D – MAINTENANCE OF THE UPGRADED SYSTEM**

### **4.1. Subject-matter**

This part concerns preventive and corrective maintenance and the comprehensive guarantee of the new fire detection system of the Justus Lipsius building.

### **4.2. Effective date of Part D**

Part D will start to run on the date of provisional acceptance of the upgrade, as approved by the GSC.

### **4.3. Payment**

All the services described in this part will be invoiced quarterly on the basis of the amounts specified in item D of Annex II - Prices and financial conditions of the contract.

### **4.4. Missions of the contractor**

#### **4.4.1. *Services required***

This part concerns all the works, services and supplies necessary for the perfect operation of the upgraded fire detection system.

The contract includes the following obligations:

- Preventive maintenance in accordance with Article 11 of standard NBN S21-100-1;
- Emergency and other repairs necessary to ensure that the system is in perfect working order;
- The updating of the managers, taking account of changes to the system;
- Replacement of damaged or worn equipment under the comprehensive guarantee (material, labour and subcontracting);
- Ensuring call-out and repair times are observed;
- Coordination of works;
- Training of users in the GSC.

The following are also included in this contract:

- The management equipment for the system's central technical control system;
- The connections to other technical installations (e.g. lift, 'fire brigade' panels, etc.).

Part D imposes obligations as to results and quality with a comprehensive guarantee for labour, material and subcontracting.

The contractor may not invoke ignorance or insufficient knowledge of the organisation or premises of the GSC or of the technical installations either to refuse to meet its commitments or to claim compensation or additional payment.

#### 4.4.2. *Obligations of the contractor*

The contractor undertakes to comply with:

- European, national and regional standards and legislation which are in force or enter into force during the term of the contract, including in particular:
  - European directives.
  - The General Regulations on Industrial Safety (RGPT) or equivalent.
  - The Code on Welfare at Work.
  - The General Regulations on Electrical Installations (RGIE).
  - Standard NBN S21-100-1.
  - Standards NBN EN 54.
  - The Royal Decree of 19 December 1997 on fire protection standards.
  - The Royal Decree of 4 August 1996 and amendments thereto incorporating European Directives 89/391/EC and 92/57/EC concerning the well-being of workers.
  - The Regional Town Planning Regulation of Brussels Capital Region of 1 January 2000.
  - Standards of good practice.
- Observations and comments made by external technical inspection services (SECT);
- Observations made by the GSC or its representative (in the context of an audit).
- A guarantee concerning regular and full maintenance of the equipment in accordance with the instructions and maintenance rules specified by the manufacturer.
- A guarantee that all interventions and services will be performed by highly qualified workers, who will at all times be aware of the condition of the system and will be able to replace any parts or devices, both in the context of regular maintenance and under the comprehensive guarantee.
- A guarantee that all necessary measures will be taken to prevent damage to the buildings and equipment and to repair any damage caused by the contractor's personnel.
- A guarantee not to impede the normal working of the GSC's services and to indicate promptly any problem the contractor becomes aware of that could harm persons and/or property.
- A guarantee to take the required steps in emergency situations and to report the matter immediately to the GSC.
- The call-out and repair times established in these tender specifications.

#### **4.4.3. Preventive maintenance**

##### **4.4.3.1. Services**

For preventive maintenance, the contractor must refer to Article 11 of standard NBN S21-100-1 and to manufacturers' instructions. Failure to comply with these obligations may result in a penalty (see 1.11.7. of Part A).

Where the operations prescribed manifestly do not result in optimal use, the contractor will make modifications to achieve the objectives that have been set.

The fixed-price part of the contract includes services relating to statutory replacement of fire detectors.

##### **4.4.3.2. Frequency of maintenance inspections**

The frequency of maintenance inspections will be specified by the contractor in order to meet its obligations under this contract.

The GSC reserves the right to require more frequent maintenance inspections if deficiencies appear or the desired outcome is not achieved, without the contractor thereby becoming entitled to claim an increase in the value of the maintenance contract.

A verification and an annual individual and physical test of each and every fire detector must be carried out by the contractor. A report must be sent to the GSC (see 1.8.2.).

##### **4.4.3.3. Maintenance schedule**

The contractor will have a period of one week, starting from the date of approval of provisional acceptance of the modernisation works (end of Part C) to draw up the annual maintenance **schedule**.

##### **4.4.3.4. Maintenance inspections**

Maintenance inspections must be carried out in accordance with the schedule. The GSC reserves the right to put back the date of a maintenance inspection in the event of force majeure (e.g. official visit, important meeting, etc.).

##### **4.4.3.5. Monthly testing of the alarm**

When tests of siren functionality are carried out by the services of the GSC, the contractor's technicians are required to rectify any deficiencies found.

##### **4.4.3.6. Evacuation exercise procedures**

When evacuation exercises are conducted (at least once a year), the contractor's technicians must be present in order to resolve any problems which may arise.

For information, the maximum duration of the annual evacuation procedure is one hour, and it is conducted during normal working hours. The costs relating to such services will be the subject of a tender in accordance with the conditions set out in Part E of the bill of quantities of the financial offer.

#### 4.4.3.7. Security servomechanisms

The contractor shall ensure that the security servomechanisms – fire control and standby power – are always operational.

The contractor shall take all steps to ensure that the necessary tests in no way interfere with the smooth running of the GSC's services.

Any problem encountered will be resolved immediately and must be mentioned in the report to be delivered to the GSC.

#### 4.4.4. *Corrective maintenance*

##### 4.4.4.1. Definition

The contractor will carry out emergency repairs and provide and/or replace all materials, equipment and spare parts required under its contractual obligations, within the time limits set.

##### 4.4.4.2. Restoring compliance of the system

As part of corrective maintenance, the contractor will carry out a restoration of compliance of the system once every month, to include the following:

- entry into service and programming of any peripheral equipment installed by the contractor during the three months prior thereto;
- updating graphic representations;
- updating the files.

These measures must be performed regardless of the number of modifications and/or extensions carried out during the previous period.

##### 4.4.4.3. Call-out management

The contractor must intervene as swiftly as possible, as specified below.

The GSC reserves the right to upgrade its call-out tracking system in order better to monitor compliance with the time limits, without the financial terms of the basic contract being changed as a result.

#### a) Time limits

Call-out time: Runs from the time of the call from the GSC's call centre to the contractor's call centre and ends once the contractor's technician has arrived on the premises and has called the GSC's call centre.

Performance time: Runs from the time when the contractor's technician calls the GSC's call centre (corresponding to the technician's arrival on the premises) as specified in the paragraph above and ends when the installation has been restarted and the contractor's technician has called the GSC's call centre.

Restart time: The sum of the 'call-out time' and the 'performance time'.

The following will be the maximum times allowed:

b) *Call-out times*

<i>Call-out times</i>	<i>Breakdown</i>
Normal working hours (see 1.6 of Part A)	30 minutes
Outside of normal working hours (see 1.6 of Part A)	two hours

c) *Restart times*

Restart times	Breakdown / Repair
Normal working hours (see 1.6 of Part A)	two hours
Outside of normal working hours (see 1.6 of Part A)	twelve hours

d) Call-out reports

In the event of a breakdown that causes serious disruption or a prolonged shut-down, or that seriously affects users, a full, specific incident report will be delivered to the GSC within 48 hours.

e) Shut-down of the system

When the system is partly shut down and before repair work is commenced, the contractor is obliged to alert the GSC's call centre and the responsible technical staff of the Technical Management service and the Safety Unit and to state the estimated period of system shut-down, the cause and the action to be taken.

f) Hazardous work

In addition, any work which carries a risk of compromising overall safety must be reported to the Safety Unit and may only be carried out after prior authorisation for performance of the work has been received. This includes:

- the use of hazardous products and performance of dangerous works (e.g. solvents, welding)
- rendering the normal evacuation routes (e.g. stairs, doors) unusable
- partial (or even total) shut-down of the technical safety system or of the fire detection/control system
- hot work permit.

g) Repairs

It must be possible for repairs and reconditioning work, including the replacement of spare parts, of whatever make, to be carried out within the performance time limits specified in 4.4.4.3.

h) Restart following repair

Once the repair work is completed and the system is restarted, the contractor will notify the GSC's call centre. Written confirmation will also be sent by e-mail to the technical manager of the Technical Management service, to the GSC call centre and to the GSC Safety Unit.

**4.4.5. *Comprehensive guarantee***

Throughout the contractual period, the contractor will supply at its own expense the materials, equipment, software, upgrades, items and spare parts necessary for the systems, equipment and devices to function properly and for their maintenance. The labour required for the replacement of such materials, software and spare parts will be included in the contract. Replacement of toner cartridges is not, however, included in the comprehensive guarantee. Replacement of this equipment will be in accordance with the conditions specified in Part E (chapter 5 - works/projects).

The contractor will provide a sufficient stock of the above elements to guarantee swift intervention in the event of any failure.

**4.4.6. *Obligations of the Secretariat***

All additional expenses will be borne by the Secretariat where, when certain parts of the installation are replaced, the Secretariat requires that higher-quality or better-performing materials that are more suitable for use thereafter, be supplied. These additional expenses shall form the subject of a specific order (part E of this annex).

The cost of repairs required as a result of misuse or malice on the part of the Secretariat or of persons for whom it is responsible will be borne by the Secretariat.

**4.4.7. *Working days and hours***

The time schedule for performance of works will be normal working hours (see 1.6. of part A). All preventive maintenance must be carried out during this time.

**4.4.8. *Log book of equipment, plans and diagrams***

The contractor must keep an up-to-date log book for the system (in accordance with standard NBN S21-100-1).

All call-outs will be recorded in the log book for the corresponding unit of equipment. The following information will be mentioned: date, start time and end time of the intervention, technician's name, type of intervention (check, maintenance, repair, breakdown service, freeing a person), cause of breakdown (malfunction, etc.).

Each installation will be equipped with a full set of plans and with the manuals needed for maintenance and repair. The plans will be kept up to date, and each change will be recorded in them in a clear and professional manner. The updating of the plans in DWG format is also included in the fixed price.



#### **4.4.9. Statutory inspections**

Comments made in the statutory inspection reports (Article 281 of the General Regulations on Industrial Safety) will be sent to the contractor by email.

If comments related to safety issues are made, the contractor will be notified directly by telephone, so that the contractor may take the necessary steps in agreement with the GSC's technical manager. The contractor is obliged to rectify the issues mentioned in these comments within a maximum of three weeks.

In respect of other comments, the contractor is required to rectify the issues mentioned in those comments within a maximum of six weeks. Derogation from these time limits is authorised only if the GSC has given prior agreement.

Any issue mentioned in the comments that is not rectified must be justified, indicating the following information:

- The number of the inspection report;
- An explanation of why the problems have not been rectified;
- The date on which each issue raised in the comments will be rectified.

The replies must be transmitted to the manager of the GSC's Technical Management service.

#### **4.4.10. Checking the equipment**

Throughout the term of the contract, the GSC reserves the right to examine the system and/or to have them examined by any person of its choosing, in order to verify their condition.

The GSC will carry out regular checks on the condition of the system at which the contractor is required to be present.

#### **4.4.11. Inspection of technical installations**

If so requested by the GSC, the contractor must assist any person commissioned by the GSC to carry out checks or inspections in the plant rooms for which the contractor is responsible.

The contractor's representative required for such tasks will:

- Be familiar with the premises.
- Have detailed knowledge of the installations.

#### **4.4.12. Transmission of technical files**

If so requested by the GSC, the contractor must provide the GSC with all technical files concerning the current system, including, inter alia, the equipment implementation plans (in DWG format), the cabling plans (in DWG format), the programming of the control units and the servomechanisms for the other technical installations.

#### **4.4.13. Reliability obligation**

The fire detection system may not be the reason for a significant number of false alarms attributable to the system itself.

- If the number of false alarms triggered is greater than one alarm per 500 individual detectors per calendar year (see definition below), the contractor must, at its own expense, undertake every possible action to bring the fire detection system into line with the new situation so that the system can again operate correctly and comply with the performance criteria.
- By false alarm, we mean:
  - System failure false alarm: an alarm triggered by a sensor following its reaction to a phenomenon similar to those it is designed to sense (e.g. smoke, temperature, radiation, CO, etc.) although no fire has started.
  - Erroneous alarm: a fire alarm triggered by a fire detector but which is not caused by fire or a similar phenomenon (e.g. EMC disturbances, etc.).

Failure to comply with this clause will give rise to a penalty (see 1.11.9. of Part A).

#### **4.5. Technical management of the contract**

Technical management of the contract will be performed by way of meetings and reports supplied by the contractor.

##### **4.5.1. Meetings**

The schedule of quarterly meetings will be drawn up by the GSC.

##### **4.5.2. Reports**

###### **4.5.2.1. Equipment management chart**

In accordance with the annual schedule of meetings drawn up by the GSC, the contractor must submit a quarterly management chart in electronic format. The management chart must consist of:

- The previous twelve consecutive months, to allow the tracking of call-out requests;
- A report specifying order status, ongoing action, comments from the official inspection body in addition to the solutions to the problems found in the systems.
- A summary table of the progress of any preventive maintenance carried out.

Changes to the management chart may be made during the course of the contract.

###### **4.5.2.2. Specific reports**

At the request of the GSC, the contractor must be able to provide information such as percentage of breakdowns, number of detections by zone, intervention times and any report required for the correct operation of the systems.

## 5. PART E - WORKS/PROJECTS

### 5.1. Subject-matter

The contractor undertakes to carry out works ordered by the GSC on an ad hoc basis during the term of the contract (existing system and upgraded system).

Such orders concern routine installation, fitting-out, extension and stand-by services not covered by the contract.

Such works must give rise to a written order from the GSC, specifying the subject-matter of the works, the cost and performance time.

Two types of order are possible:

- in the case of the standard works (flat-rate) laid down in point 5.4.2 of this Part, the orders will be based on the amounts set out in E.3. of the bill of quantities of the financial offer,
- in the case of more specific works or works on the existing system, which has not yet been upgraded, the orders will be the subject of a tender and will be remunerated according to point 5.4.1 of Part E.

### 5.2. Human resources

The contractor must deploy human resources in addition to the resources assigned to maintenance work in order to ensure that such works are performed properly. If maintenance personnel have to be assigned to such works to ensure the proper performance of specific tasks, this will be done in addition to the maintenance operations and an exact breakdown of the hours allocated to the services provided will be communicated to the GSC.

Where specific works have to be carried out during maintenance work, the contractor must increase the staffing levels accordingly so that all the work can be completed.

The personnel responsible for carrying out the specific works must in all cases have the skills required in keeping with the nature of the work requested.

### 5.3. Deadline for submitting tenders

If not explicitly mentioned in the invitation to tender, the prior estimate must reach the GSC within the time limits mentioned below, running from the time the GSC publishes its invitation in writing. For reasons of efficiency, the GSC's invitation will be issued by email.

	<i>Max. time limit (working days)</i>
Urgent invitation	one day
Normal invitation	five days
Invitation involving a subcontractor	ten days
Invitation involving a study	20 days (except for special cases to be justified to the GSC)

## **5.4. Prices and payment conditions**

### **5.4.1. Specific works**

Orders will be paid for at the hourly rates set out in E.1. in the bill of quantities (financial offer - *Annex III to the tender specifications and Annex II to the draft contract*). The hourly rates will be drawn up in accordance with the economic conditions in the basic contract and will include:

- travel costs (travelling time and use of vehicle)
- the costs related to the preparation of work
- processing charges.

The hours actually worked on site therefore only appear in the estimates or timework orders.

The hourly rates may be revised in accordance with the method set out in the basic contract.

For any request to tender, the contractor will be obliged to produce a prior estimate, divided into two parts: materials and labour.

Labour will cover the estimated number of hours needed to carry out the works.

All the materials used will be listed, quantified and justified (copy of the supplier's tender).

All the sub-contractors used will be listed, quantified and justified (copy of the sub-contractor's tender).

The performance time will also be indicated.

The contractor will send the estimate by email. If the amount of the sub-contractor's estimate is too high, the GSC reserves the right to propose to the contractor a subcontractor of its choice whose financial terms are more favourable.

Once the GSC has given its agreement, the final version will be sent to the GSC by email and by post.

The contractor must attach to its invoice a detailed report on the hours actually worked on site and the sub-contractor's invoices for materials and the workforce to which it can apply a coefficient referred to in E.2. of the bill of quantities (financial offer - *Annex III to the tender specifications and Annex II to the draft contract*) including profits, costs, travel and ancillary costs.

Where urgent works are required for safety reasons or to limit the time the installation is out of action, the contractor will, after obtaining the GSC's agreement, carry out the necessary works. A regularisation order will be issued on the basis of the detailed statement provided by the contractor and validated by the GSC.

### **Procurement procedure**

If, within the limits laid down in the contract, the contractor wishes to use a subcontractor or supplier to perform part of the contract, it must comply with the procurement procedure detailed below:

If, in the area concerned, companies have direct links with the GSC through other contracts, the contractor must call on those companies first, and they must produce their tenders on the basis of the terms stipulated in their own contract.

In other cases, the selection of subcontractors or suppliers will be organised by analogy with the provisions laid down in the Financial Regulation (Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council of 25 October 2012, last amended by Regulation (EU, Euratom) No 2015/1929 on the financial rules applicable to the general budget of the Union) and its rules of application (Commission Delegated Regulation (EU) No 1268/2012 of 29 October 2012, last amended by Delegated Regulation (EU) No 2015/2462):

- (a) Calls to subcontractors or suppliers for tenders or for services or works must be initiated by the contractor in collaboration with the department of the GSC managing the contract ('the Secretariat'), in accordance with the estimated value of the contract to be awarded, i.e.:
- EUR 0 => 15 000: a valid tender must be submitted; this does not preclude the possibility for the contractor to request prices from several companies, nor for the Secretariat to impose a requirement for wider competition. The candidate may be presented by the contractor or by the Secretariat. The choice must be approved by the Secretariat.
  - EUR 15 001 => 60 000: at least three candidates must be consulted; this does not preclude the possibility for the contractor to request prices from a larger number of companies, nor for the Secretariat to impose a requirement for wider competition. Candidates may be presented by the contractor or by the GSC. If, following consultation of the candidates, the contracting authority receives only one tender that is administratively and technically valid, the contract may be awarded provided that the award criteria are met. The choice of the successful tender must be approved by the Secretariat.
  - Above EUR 60 000: depending on the technical nature of the project, the degree of urgency and the service continuity of the installations:
    - The Secretariat may conduct the procurement procedure itself in accordance with the Financial Regulation and its rules of application. In this case, the successful tenderer is imposed on the contractor as the co-contractor.
    - Alternatively, the contractor may receive authorisation from the GSC to survey the market and/or initiate a call for tenders on the basis of a list of companies produced in collaboration with the Secretariat, or, where applicable, a list drawn up by the Secretariat following a call for expressions of interest.
- (b) Competitive tendering documents (simple price request or invitation to tender in more complex cases) must be drawn up by the contractor on the basis of templates provided by the Secretariat. Invitations to tender must be approved by the Secretariat before being sent to the candidates, as must price requests if the Secretariat so wishes. More particularly, the procedures for evaluating tenders, the criteria for awarding the contract and, if applicable, the selection criteria, must be decided by common accord between the contractor and the Secretariat.
- (c) Calls for tenders must be sent simultaneously to all the companies selected. Proof of sending must be attached to the file.
1. For contracts below EUR 60 000, sending by e-mail or fax will be accepted.
  2. For contracts above EUR 60 000, the file must be sent at least by post (registered letter).
- (d) The arrangements for receiving tenders are as follows:
1. for contracts below EUR 60 000, receipt by fax or email will be accepted;
  2. For contracts above EUR 60 000, tenders must be sent by registered mail/courier. Hand-delivery to the unloading bay will also be permitted. Tenders must be addressed to the GSC department managing the contract. They will be opened by the same committee as will carry out the evaluation.

(e) Tenders will be evaluated as follows:

1. Contracts below EUR 60 000. The contractor must carry out a preliminary evaluation. The examination of the tenders and the selection of the successful tender must be finalised by the contractor with the participation of at least one member of the GSC department managing the contract.
2. Contracts above EUR 60 000. A committee will be responsible for evaluating the tenders. It will be made up of one or more members of the contractor's staff, one or more members of the GSC department managing the contract and one member of the Finances Unit of DGA 2B.

(f) The contractor must draw up a comparative table for evaluating the offers (technical and financial – free format). For contracts above EUR 60 000, it must draw up its tender evaluation report on the basis of the template provided by the GSC.

The procedures for competitive tendering for subcontracting and/or supplies and the amounts set out above may be amended in keeping with developments in the rules applicable to the Secretariat. The GSC will inform the contractor of any changes in good time by registered mail so that the new arrangements can be implemented correctly.

#### **5.4.2. Standard works (for the upgraded system only)**

Type 1 works will include:

- the delivery and placing of connecting cables

Type 2 works will include:

- the services required for opening and closing the panels in the suspended ceiling
- drilling the panels
- drilling the ventilation duct etc.

The contractor will provide a price in E.3 of the bill of quantities (financial offer - *Annex III to the tender specifications and Annex II to the draft contract*) for the following standard works:

- 1) delivery, placing and installation of a multi-criteria detector on an existing loop including type 1 and 2 works
- 2) delivery, placing and installation of a heat detector on an existing loop including type 1 and 2 works
- 3) delivery, placing and installation of a duct detector on an existing loop including type 1 and 2 works
- 4) delivery, placing and installation of a manual push button on an existing loop including type 1 and 2 works
- 5) delivery, placing and installation of a siren on an existing loop including type 1 and 2 works
- 6) delivery, placing and installation of a multi-criteria detector on an existing loop including type 1 works
- 7) delivery, placing and installation of a heat detector on an existing loop including type 1 works
- 8) delivery, placing and installation of a duct detector on an existing loop including type 1 works
- 9) delivery, placing and installation of a manual push button on an existing loop including type 1 works
- 10) delivery, placing and installation of a siren on an existing loop including type 1 works
- 11) dismantling and refitting of a work area detector.

#### **5.4.3. Acceptance of the works**

Once the works have been completed they will, at the request of the contractor, undergo an acceptance procedure. Such acceptance must take place within the time limit specified in the order.

#### **5.4.4. Invoicing**

An invoice will be drawn up for each order and will include the order issued by the GSC and a copy of the report of acceptance of the works.

#### **5.4.5. Warranty**

The work will be covered by a twelve-month guarantee on parts and labour with effect from the date of acceptance.

#### **5.4.6. Compensation**

Any order not carried out within the agreed time may result in compensation (cf. 1.11.10. part A of this Annex)

### **5.5. Works coordinated by the general contractor**

For multi-disciplinary or joint fitting-out projects, the Secretariat has the option of assigning a coordination role to a general contractor with which it has concluded a framework contract.

This general contractor will be responsible for overall technical and administrative coordination throughout the duration of a project.

To that effect, it must oversee and organise all of the works, with specific responsibility for:

- setting the dates on which the various professional groups must begin their work on site;
- providing instructions to ensure that all of the works are carried out smoothly and continuously, and in particular, on the basis of the schedule, establishing the order for carrying out the tasks and the on-site working dates for all professional groups;
- organising (technical and coordination) site meetings at least once per week.

It must also install a basic site facility.

Coordination instructions given by the general contractor, in particular in the areas of procedure, preliminary studies, technologies and scheduling of the performance of work phases by the various professional bodies, should be considered by the contractor to be equivalent to instructions given by the Secretariat.

## **APPENDICES<sup>1</sup>**

Appendix 1: Existing system - Description

Appendix 2: Address/Servomechanisms/Alarms block diagrams

Appendix 3: Programming

Appendix 4: Control units' capacity

Appendix 5: SG + CO implantation plans

Appendix 6: Cable length

Appendix 7: Project management board (PMB)

(TO BE PROVIDED BY THE TENDERERS)

Appendix 8: Schedule

(TO BE PROVIDED BY THE TENDERERS)

Appendix 9: Understanding and managing the existing system

(TO BE PROVIDED BY THE TENDERERS)

Appendix 10: Extension possibilities

(TO BE PROVIDED BY THE TENDERERS)

Appendix 11: Phasing of works

(TO BE PROVIDED BY THE TENDERERS)

Appendix 12: EN 54 certification of equipment

(TO BE PROVIDED BY THE TENDERERS)

Appendix 13: Technical data sheets for the proposed equipment

(TO BE PROVIDED BY THE TENDERERS)

Appendix 14: Block diagrams for the new system

(TO BE PROVIDED BY THE TENDERERS)

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<sup>1</sup> The appendices will be available to the selected candidates who have passed the first phase.