PADDINGTON GREEN
POLICE STATION

Concept Qualitative Design Review Report

Concept Qualitative Design Review Report– November 2022 - GLA0711

NOVEMBER 2022

Berkeley
Designed for life

AESG

BERKELEY GROUP

Paddington Green Police Station - Blocks I, J and K

Concept Qualitative Design Review Report

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1 Executive Summary

AESG has been appointed by Berkeley Group to provide fire consultancy services for Blocks I, J and K of the Paddington Green Police Station project in Marylebone, London. The intention of the fire strategy design for the residential part of the building is to comply with Draft BS 9991:2021 [1] and for non-residential areas within the building to comply with BS 9999:2017 [2].

In accordance with Section 0.7 of Draft BS 9991:2021 and Section 0.3 of BS 9999:2017, a Qualitative Design Review (QDR) report is required for any building that is taller than 50 m. When measured from Fire Service access level to the highest occupied floor, all three blocks within the Paddington Green Police Station development are above 50 m. Therefore, a QDR report is necessary to determine whether the minimum requirements detailed in BS 9991 are appropriate for buildings above 50 m or whether system enhancements are required in order to achieve the expected performance or reliability.

The project is currently at RIBA Design Stage 2 and therefore the QDR report has been prepared using a conceptual level of fire strategy detail. As the design develops further, and more detailed design information is prepared, a detailed QDR will be completed. This is typically completed as part of RIBA Design Stage 3. On this basis, the report refers to a "Concept QDR" which is appropriate at this stage of the project. The methodology of the Concept QDR is in accordance with British Standard 7974 Application of fire safety engineering principles to the design of buildings – Code of practice [3]. Full details of how the methodology was applied is detailed within Section 4 of this report.

Note. Prior to the commencement of the concept QDR, the intended methodology was presented to Westminster City Council Building Control (WCCBC) and agreed.

The Concept QDR has been completed using information gathered from an initial design review and information gathered from stakeholders within the design team. AESG has liaised with the specialist consultants responsible for designing the active systems/passive measures required to be incorporated into the design to facilitate the buildings' fire strategies.

1.1 Fire Strategy Principles

The key fire strategy principles for Block I, J and K which will be used to comply with the functional requirements of the current Building Regulations 2010 (2018 as amended) has been summarised in Table 1.

Table 1: Summary of Fire Strategy Principles Applied to Block I, J and K

	Block I	Block J	Block K	Ground Floor	Basement
Detection and alarm system	Grade D LD1 automatic detection within open plan apartments Grade D LD2 automatic detection within all other apartment types Heat detectors within kitchens			L2 automatic detection within ancillary and commercial areas.	L2 automatic detection within basement car park.

	L5 automatic detection within common escape routes.				
Evacuation strategy	Defend in place evacuation strategy within apartments. All blocks are provided with 2 independent escape stairs. Evacuation lifts, refuges and two-way communication in each lift lobby. Flat or suitably ramped escape routes to reach a final exit.			Simultaneous evacuation within amenity, ancillary and commercial areas.	Simultaneous evacuation within car park.
Suppression systems	Residential system designed and installed in accordance with BS 9251.			Commercial system designed and installed in accordance with BS EN 12845.	
Smoke ventilation strategy	Mechanical ventilation will be provided throughout. The system will be designed and installed in accordance with BS EN 12101-6. Computational Fluid Dynamics (CFD) modelling and assessment will be used to validate the performance of the chosen system. This will be conducted during RIBA Stage 3.				
Structural fire resistance	Will be designed to achieve the requirements of Section 24 of BS 9991-2021(draft) All structural members will be provided with at least 120 minutes fire resistance.				
External fire spread	Unprotected areas within the façade will be limited on the basis of a BR 187 assessment. Materials and workmanship will achieve the requirement of Regulation 7. Cavity barriers, cavity closers and fire stopping will be provided in accordance with BS 9991-2021 (draft).				
Firefighting provisions	1 x firefighting (FF) shaft containing an FF stair, FF lift and FF lobby. Wet rising fire main. Premises information box containing plans and building information. An emergency evacuation alert system will be provided.	1 x firefighting (FF) shaft containing an FF stair, FF lift and FF lobby. Wet rising fire main. Premises information box containing plans and building information. An emergency evacuation alert system will be provided.	2 x firefighting (FF) shafts containing an FF stair, FF lift and FF lobby. Wet rising fire main. Premises information box containing plans and building information. An emergency evacuation alert system will be provided.	Suitable hardstanding / roadway for a Fire Service pumping appliance to be sited within 18 m of a suitable entrance giving access to the fire main. Fire appliance can also be sited within 18 m of the emergency tank refill inlet. An emergency evacuation alert system will be provided.	3 x firefighting (FF) shafts containing an FF stair, FF lift and FF lobby. Wet rising fire main. Premises information box containing plans and building information. An emergency evacuation alert system will be provided.

1.2 Liability

AESG has created information request sheets for each active system/passive measure required to support each building's fire strategy. The information request sheet was instructed to be completed by a consultant who is suitably familiar with the project and technically qualified and experienced to fully understand the limitations of the system they are responsible for.

AESG has requested that the author of each form signs a declaration confirming this requirement. On this basis, the liability for the accuracy of the information and the assessment of the system design lies with the consultant and not with AESG.

2 Document Limitations

2.1 QDR Scope - Concept

Typically, a QDR will be conducted during RIBA Design Stage 3. This allows stakeholders within the design team to produce detailed information about active systems and passive measures incorporated into the design. As this QDR is being conducted during the project planning stage (RIBA Design Stage 1-2), detailed design information is not yet available.

AESG has provided a summary of the anticipated Fire and Life Safety measures which will be required to support each building's fire strategy. The QDR will review each system to establish what testing and/or assessment will be conducted during RIBA Design Stage 3 to ensure they achieve the necessary performance/reliability criteria. The fire strategy achieves linear compliance with BS 9991 and therefore fire engineered solutions are not proposed to mitigate any departures from standard guidance.

2.2 Computational Fluid Dynamics (CFD)

The design incorporates mechanical smoke ventilation systems. AESG will use Computational Fluid Dynamics (CFD) simulation and assessment to demonstrate that the system can achieve the performance criteria outlined within BS 7974. The methodology, test data and conclusions will be provided in a separate CFD QDR and issued to Building Control, London Fire Brigade and the HSE. This approach is also compliant with the guidance within BS 9991.

2.3 Input Data

Key stakeholders have been tasked to provide input into this process by reviewing elements of the proposed fire strategy. The design consultant responsible for each active system/passive measure has been asked to use their expert knowledge and project experience to comment on whether each one is suitable to be used in a building above 50 m.

AESG has distributed a standardised information request form to each of the stakeholders requesting information about specific active systems/passive measures. The purpose of the

standardised form is to ensure that the required level of detail is provided by each consultant and that the review process is consistent.

AESG has requested that each information request sheet includes a signed declaration which states that the author is suitably familiar with the project and technically efficient to understand the limitations of the given system.

Copies of each completed form, and a document tracker, is provided in Appendix A and Appendix B of this report.

2.4 Single Points of Failure

Within the standard guidance of BS 9991 and BS 9999 all fire and life safety systems are required to be provided with reasonable design contingencies to allow the system to continue to function following the failure of a single component. Examples include secondary power supplies to support systems which require electricity to function, standby fans for smoke ventilation systems or manual activation methods for systems which typically operate electronically. On this basis, AESG and the design team have only considered a single point of failure at any given time.

Similarly, BS 9991 and BS 9999 only consider single fire locations and do not account for multiple fires occurring at the same time, nor does either document consider arson. AESG has adopted the same approach as part of this QDR process.

2.5 Changes of Active Systems/Passive Measures

It is not anticipated that the proposed active systems/passive measures will need to be changed to achieve the required level of fire life safety within buildings above 50 m. The strategy has been developed to ensure that the proposals are suitable and sufficient for buildings of this height. However, it is prudent to account for the possibility that due to unforeseen circumstances, active systems/passive measures may need to be changed as the design develops further.

In this scenario any changes to the design will be re-assessed to ensure they are suitable and sufficient. Whilst the impact of any design change will be reviewed holistically, this does not imply that the assessment of any existing active system/passive measure will become invalid.

To facilitate this, the QDR report will be a live document that is updated as required during the project programme. The QDR report will be submitted as part of the fire safety information submitted at the conclusion of each RIBA Design Stage.

3 Introduction

3.1 Building Description

The Paddington Green Police Station site is located in Marylebone, London. The project consists of three mixed use blocks distinguished as Block I, Block J and Block K. Each block comprises of

commercial units at ground floor level and residential units on all floors above ground. All of the blocks share two basement levels which provide car parking and bike storage as well as ancillary accommodation and plant space.

Each building is above 50 m in height and is provided with two escape stairs. Neither Block I nor Block J have a floor with an area which is greater than 900 m^2 . On this basis, Block I and Block J are provided with one firefighting shaft comprising of a firefighting lift, an evacuation lift, firefighting stair and protected firefighting lobby. Block K does have a floor with an area greater than 900 m^2 and is provided with two firefighting shafts.

3.2 QDR Background

Each block within the Paddington Green Police Station development is greater than 50 m in height. The height of each building is listed in Table 2 below;

Table 2: Building Height Summary

Block	Building Height	Number of Floors
I	78.3 m	24 (Ground + 23)
J	55.7 m	17 (Ground + 16)
K	128 m	39 (Ground + 38)

The initial design intention for the fire strategy is to comply with the functional requirements of the current Building Regulations 2010 (2018 as amended).

Guidance documents BS 9991:2021 (draft) and BS 9999:2017 have been used as the basis for design. When followed, both documents are recognised methodology to achieve linear compliance with Section B1 to B5 of the Building Regulations.

Both BS 9991 and BS 9999 state that due to the increased demands generated by buildings above 50 m, a QDR must be conducted. The QDR must be completed in accordance with BS 7974 and determine whether the recommendations of BS 9991/BS 9999 are appropriate for a building above 50 m or whether fire engineered solutions are required.

3.3 The QDR process

Table 3 lists each stage of the QDR process as recommended within BS 7974.

Table 3: BS 7974 QDR Process

Stage	Clause within BS 7974	Description
1	5.1.3 a	Review the architectural design and selection of materials including their suitability and fire properties, occupant characteristics and client requirements.
2	5.1.3 b	Establish functional objectives for fire.
3	5.1.3 c	Identify fire hazards and possible consequences
4	5.1.3 d	Establish trial fire safety engineering (FSE) designs where required.
5	5.1.3 e	Set acceptance criteria
6	5.1.3 f	Identify method of analysis
7	5.1.3 g	Establish fire scenarios for analysis
8	5.1.3 h	Document the outputs of the QDR and implementation into the final design.

BS 7974 states the following;

"The interaction of fire, buildings and people give rise to an almost infinite number of possible scenarios; therefore, before attempting to carry out detailed quantified analysis, the significant fire hazards should be identified, the problem simplified, and the required extent of quantification established".

On this basis AESG has created a QDR methodology specific to this project. The methodology adequately considers the active systems/passive measures required to comply with standard design guidance and the functional objectives of the Building Regulations. As the design does not rely on fire engineered solutions to achieve these objectives, the performance criteria are based on the relevant standards and guidance associated with each specific system.

The QDR process relies on specialist design input from the consultant responsible for each active system/passive measure incorporated into the design to support the overall fire strategy. The consultant has used their technical knowledge and experience to establish whether the system requires further testing and assessment to determine its suitability for installation within a building above 50 m in height.

As the QDR is being completed during RIBA Design Stage 2 only conceptual designs are available to review. As such the QDR will only detail the 'intended' testing and assessment. The proposed testing and assessment will be conducted as part of RIBA Design Stage 3 and included in the full QDR report which will also be completed during this design stage.

The consultant has also considered measures provided within the design to achieve the reliability of the system as well as its performance. This process reviews the impact of secondary systems failing

which may be detrimental to the performance of the primary system. Additionally, this process also reviews the impact of failure of the primary system on other systems within the building.

The methodology used for this concept QDR has been shown in Table 4. This methodology was presented to Building Control prior to the QDR commencing. Building Control agreed that this methodology was proceedable.

Further details of each stage of the QDR process are provided in Section 4 of this report.

Table 4: QDR Methodology

Stage	Description
1	Establish the functional requirements of the Building Regulations
2	Establish the minimum requirements of standard design guidance
3	Identify the system chosen to meet the requirements of standard design guidance
4	Establish the performance criteria of the chosen system
5	Identify standard system components used to improve reliability
6	System design considerations when used in buildings above 50 m
7	Identify tests/assessments required to ensure the required performance/reliability of the system is achieved when used in a building above 50 m
8	Identify potential measures which can be taken to improve the performance/reliability of the chosen system

4 Concept QDR Methodology

4.1 Stage 1 - Functional Requirments of the Building Regulations

The design of each block is intended to comply with the functional requirements B1-B5 of the Building Regulations 2010 (2018 as amended) in relation to meet the fire life safety design objective. A description of these requirements is listed below:

- B1 – Means of warning and escape
- B2 – Internal fire spread (linings)
- B3 – Internal fire spread (structure)
- B4 – External fire spread
- B5 – Access and facilities for the Fire Service

4.2 Stage 2 - Standard Design Guidance

In order to comply with the functional requirements of the Building Regulations, AESG has used BS 9991:2021 (draft) as a basis of design for all residential areas. BS 9999:2017 has been used as the

basis for design within all other areas. The design has been reviewed regularly throughout RIBA Design Stage 2 to ensure that it complies with the minimum requirements detailed in each document.

As part of this process, each specialist consultant has also provided details of any other guidance documents used as part of the system design process. Further details are provided in the information request sheets attached in Appendix A and Appendix B of this report.

4.3 Stage 3 - Choice of System

As the project is currently at RIBA 2 Design Stage, detailed design information is not yet available. AESG has provided a summary of the fire life safety systems which will be incorporated into the design to support the fire strategy of each building. This is shown in Table 1 of this report. Whilst the active systems/passive measures have been identified and reviewed as part of this QDR, the enumeration of system details is limited by the infancy of the project.

4.4 Stage 4 - Performance Criteria

All active systems/passive measures are designed to perform as required by relevant standard design guidance documents. Where multiple guidance documents are required to be considered, the most onerous of all the performance requirements will be met.

4.5 Stage 5 - Reliability Measures Within the System Design

The responsible consultant will identify the inherent components (if know at this stage) that will improve reliability or performance of each active system/passive measure.

4.6 Stage 6 – Design Considerations

BS 9991 and BS 9999 state that the minimum requirements detailed in each document can be applied to a building of any height. However, buildings above 50 m in height may generate increased demands on active systems/passive measures incorporated into the design. On this basis each consultant has been asked to review their design and determine what considerations must be made when using the system within a building above 50 m.

4.7 Stage 7 – System Testing and Assessmet

Based on the outcomes of Stage 6, the consultant has identified any further testing and/or assessment that is required to establish if the chosen system is suitable for use in a building above 50 m. The outcome of each test/assessment will determine if the standard design is suitable, whether system enhancement to the standard design is required or if a fire engineered solution is required to achieve the functional requirements of the Building Regulations.

As the project is at concept stage detailed system design information is not yet available. As such any testing and/or assessment will not be completed as part of this concept QDR but will be included as part of the full QDR at RIBA 3 Design Stage.

4.8 Stage 8 – System Enhancements

Based on the outcomes of Stage 7, the consultant may determine that system enhancements may be required to achieve the required performance/reliability criteria. Alternatively, results of the testing/assessment may establish a requirement for a fire engineered solution instead. This stage will also be completed as part of the full QDR process during the next design stage of the project.

4.9 'What If' Study

The QDR also assesses system failures or foreseeable events that may impact on the overall fire strategy of each building or the performance of other systems. As part of the QDR process, consultants were asked what impact the failure of secondary systems would have on the performance of the primary system. This process also reviews the impact of failure of the primary system on other systems within the building.

AESG has discussed the extent of 'what if' scenarios with Building Control and agreed to assess the following as part of this QDR process:

- What if the sprinkler system fails?
- What is the mains power supply fails?
- What if a detector/alarm fails?
- What if a smoke control fan fails?
- What is the detection system fails to unlock access control measures within escape routes?

5 Concept QDR Record

Based on the available design information, each proposed active system/passive measure incorporated into the design has been assessed by the appointed consultant to confirm its suitability. The suitability of each active system/passive measure is based on whether it complies with standard design guidance, and that it is suitable for implementation within buildings above 50 m.

To establish suitability each consultant has been issued with an information request form which they have been asked to complete. A spreadsheet has also been created to track progress of each form and record summary results. This tracker is provided in Appendix A of this report. Each completed form is provided in Appendix B of this report.

Table 4: QDR Methodology

Information request sheet number	Assessed active system/passive measure	Assessment completed		System suitable for a building above 50 m?		Serious design risk identified?	
1	Fire detection and alarm (residential)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
2	Fire detection and alarm (ancillary)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
3	Fire detection and alarm (commercial)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
4	Fire detection and alarm (Fire Life Safety system activation)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
5	Smoke ventilation system (lobbies/corridors)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
6	Smoke ventilation system (stairs)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
7	Smoke ventilation system (ancillary areas)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
8 (1)	Smoke ventilation system (commercial areas)	YES	NO	YES	NO	YES	NO
		☐	☒	☐	☐	☐	☐
9	Suppression system (residential)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
10	Suppression system (ancillary/amenity areas)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
11	Suppression system (commercial areas)	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
12	Firefighting/evacuation lift	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
13		YES	NO	YES	NO	YES	NO

	Fire main and associated plant	☒	☐	☒	☐	☐	☒
14	Building structure	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
15	Emergency power supplies	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
16	Security systems	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
17	Remote building management system	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒
18	Emergency lighting	YES	NO	YES	NO	YES	NO
		☒	☐	☒	☐	☐	☒

Note. (1) See Section 5.1 of this report.

5.1 Smoke Ventilation Within Commercial Areas

Block I, Block J and Block K contain commercial units at Ground Floor level. The current designs only show shell and core detail. Whether these units will be provided with a mechanical smoke ventilation system used elsewhere in the building, or whether an alternative solution such as venting through windows and doors in the façade is yet to be confirmed. At this stage of the design development, speculation of the final strategy could provide misinformation to both the design team and the approvals authorities. As such, the exact ventilation strategy for each unit will be subjected to a QDR as the fit out design is developed further. This QDR report will be updated when this assessment is completed, and the information and conclusions will be added to the RIBA Design Stage 3 Fire and Life Safety strategy.

6 Conclusions

6.1 General Conclusion

AESG has developed a concept fire and life safety strategy for each block within the Paddington Green Police Station development in compliance with current Building Regulations. This concept strategy has been developed in accordance with standard design guidance. BS 9991:2021 (draft) has been used as a basis for design within the residential areas and BS 9999:2017 has been used as a basis of design for all other areas. The current design is compliant with the respective guidance. The potential impact/risk associated with the fact that the buildings are above 50 m has been considered. Based on the information received from the specialist consultants, the proposed active

systems and passive measures incorporated into the design are suitable for buildings above 50 m in height and in line with current regulation and guidance documents.

The information received from each consultant does identify tests and assessments which will be conducted in order to determine if additional measures are required to achieve the required performance and reliability of each active system/passive measure incorporated into the design. Based on the information received, it is not anticipated that the outcome of any test/assessment would cause significant impact of the spatial coordination within the building, even in the event that additional measures are incorporated into the system design.

AESG has reviewed the Fire and Life Safety strategy in conjunction with the information provided by each specialist consultant. AESG is satisfied that the strategy does not rely entirely on any single system or measure to achieve the required level of fire life safety.

The fire strategy principles established during this stage are conceptual and the details of each active system/passive measure will be developed at a later stage. Should any design changes be identified, they will be updated, addressed and recorded as part of the live QDR process. A full QDR will be carried during the detailed design stage and included in the RIBA Design Stage 3 Fire and Life Safety strategy.

6.2 Conclusion of 'What If' Scenarios

AESG has provided specific information for each 'what if' scenario discussed with WCCBC. The outcome of each assessment is detailed below. The corresponding design information sheet numbers are also provided for further reference.

6.2.1 What if the sprinkler system fails?

The sprinkler system will be supplied from a water tank. The tank is designed so that it can be replenished from the town main. The tank is provided with two connections so that if the primary fails the intake can be switched to the secondary inlet. In addition, an emergency tank refill inlet will be provided so that the Fire Service can replenish the supply using lay flat hose and a hydrant.

The system is provided with standby pumps so that in the event of the primary pump failing, standby pumps will activate and allow the system to operate as designed.

A robust management strategy will be used throughout the building. The management strategy will provide clear guidance about procedures during routine maintenance and repair.

As the system requires electrical power to operate pumps etc. a secondary power supply will be provided so that the system can continue to perform as designed in the event of a primary power supply failure.

As part of a conservative approach, smoke ventilation systems will be designed to account for unsuppressed fires. Other design considerations such as structural fire resistance have also been assessed on the assumption that the sprinkler system has failed to operate.

Relating to system design information form 9, 10 and 11 attached in Appendix B.

6.2.2 What is the mains power supply fails?

Fire and life safety systems which require power will be provided with a mains supply. A diesel generator will also be installed to provide means for a secondary power supply. The generator will be configured to automatically actuate if mains power fails.

Relating to system design information form 15 attached in Appendix B.

6.2.3 What if a detector/alarm fails?

The detection and alarm system installed throughout the building will be fully addressable at the main control panel. System faults will generate a notification which can be immediately acted upon by the building/unit management team. Resolution of faults and general testing and maintenance procedures will be incorporated into the buildings management strategy.

Detector heads will be primarily powered by mains electricity and secondary power will be provided by the buildings emergency generator. Batteries will also be provided within individual units.

In the unlikely event that the detection and alarm system fail, an alert will still be raised when the suppression system actuates.

Ventilation systems actuate when smoke is detected within escape routes. An override switch will also be provided at ground floor so that the Fire Service can actuate the systems manually should the L5 detection system fail to operate as intended.

Relating to system design information form 1, 2, 3 and 4 attached in Appendix B.

6.2.4 What if a smoke control fan fails?

A smoke ventilation strategy has been provided for implementation within the subterranean levels and within common escape routes within the residential demise. Each system is primarily powered by mains electricity. Should this power source fail, a diesel generator will supply a secondary power supply. Ventilation systems are also provided with standby fans for use when the primary fan malfunctions.

Computational Fluid Dynamics (CFD) will be used to demonstrate that the proposed system can achieve the required performance criteria. As part of a conservative approach, CFD simulations are completed using the assumption that the sprinkler system has failed.

The ventilation system will be provided with a manual activation switch so that it may be operated manually in the event that the L5 detection system fails to operate as intended.

Relating to system design information form 5, 6, 7 and 8 attached in Appendix B.

6.2.5 What if access control measures fail to disengage within escape routes?

The key stakeholder has not yet finalised the design for security measures associated with access throughout the building. As such specific measures have not been detailed as part of the concept QDR process. However, based on AESG's conversation with Buro Happold it is understood that manual deactivation of security measures will be provided in the form of break glass panels adjacent to storey and final exits. Upon disengagement of the glass panel all access restriction measures will fail safe.

7 References

[1] BS 7974:2019 Application of fire safety engineering principles to the design of buildings – Code of practice.

[2] Draft BS 9991:2021 Fire safety in the design, management and use of residential buildings – Code of practice.

[3] BS 9999:2017 Fire safety in the design, management and use of buildings – Code of practice.

APPENDIX A

QDR INFORMATION TRACKER

AESG

INFORMATION REQUEST TRACKER - PADDINGTON GREEN POLICE STATION - BLOCK I, J AND K						
INFORMATION REQUEST NUMBER	DUTY HOLDER	ITEM BEING ASSESSED	INFORMATION REQUEST SENT?	INFORMATION REQUEST RETURNED?	SERIOUS ISSUES IDENTIFIED?	COMMENTS
1	Buro Happold	Fire detection and alarm system (residential demise)	Yes	Yes	No	
2	Buro Happold	Fire detection and alarm system (ancillary areas)	Yes	Yes	No	
3	Buro Happold	Fire detection and alarm system (commercial areas)	Yes	Yes	No	
4	Buro Happold	Fire detection system (for activation of life safety systems)	Yes	Yes	No	
5	Buro Happold	Smoke ventilation system (within lobbies / corridors)	Yes	Yes	No	
6	Buro Happold	Smoke ventilation system (within stairs)	Yes	Yes	No	
7	Buro Happold	Smoke ventilation system (within ancillary areas)	Yes	Yes	No	
8	Buro Happold	Smoke ventilation system (within commercial areas)	Yes	No	No	The current design only show shell and core detail for the commericail areas. Once the ventilation strategy is confirmed a QDR will be conducted for these areas.
9	Buro Happold	Residential suppression system	Yes	Yes	No	
10	Buro Happold	Ancillary / amenity suppression system	Yes	Yes	No	
11	Buro Happold	Commercial suppression system	Yes	Yes	No	
12	Buro Happold	Firefighting / evacuation lift	Yes	Yes	No	
13	Buro Happold	Fire main and associated plant	Yes	Yes	No	
14	Walsh	Building structure	Yes	Yes	No	
15	Buro Happold	Emergency power supplies	Yes	Yes	No	
16	Buro Happold	Security systems	Yes	Yes	No	
17	Buro Happold	Remote building management system	Yes	Yes	No	
18	Buro Happold	Emergency lighting	Yes	Yes	No	

APPENDIX B

SYSTEM DESIGN INFORMATION FORMS – GUIDANCE NOTES

1 Project Information – Guidance Notes

- This section will be pre-populated by AESG.
- It is important to check the details and ensure they are correct.
- It is important that the information provided is accurate to the particular site/block/location detailed in this section.

2 Stakeholder Information – Guidance Notes

- This section will be pre-populated by AESG.
- It is important to check the details and ensure they are correct.
- It is important that the contact information is accurate.
- If required, details of additional consultants may be added. If multiple consultants are added, indicate who is the lead consultant from your organisation.
- Where additional consultants are added to the form, please provide direct contact information rather than general company telephone numbers and email addresses.

3 Basis of System Design – Guidance Notes

- Only the sections highlighted in **RED** will be populated by AESG. The consultant must complete the remaining sections.

DESIGN GUIDANCE DETAILS				
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY				
IS THE PROPOSED SYSTEM COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS				
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN				
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS				

- AESG will enter details of the guidance document used as a basis of design for the fire strategy.

- AESG will indicate whether the system is code compliant or is required to be supported by additional studies, assessments and/or mitigation.
- AESG will add comments, as necessary.
- The consultant should enter details of any other guidance documents used as part of the system design.

Example.

If we consider designing stairs, the consultant will note that the fire strategy is based in Approved Document B:2022 – Volume 1, dwellings. However, the consultant may also refer to Approved Document K:2013 – Protection from falling collision and impact during the design.

- The consultant will indicate whether the system is code compliant or is required to be supported by additional studies, assessments and/or mitigation.
- The consultant will add comments, as necessary.

4 System Design Summary – Guidance Notes

- The consultant should provide a high level description of the chosen system. The description should enable the reader to understand the purpose of the system and how the system operates.
- It is beneficial to attach system design drawings. Drawings should be added as an appendix. In this section indicate whether plans have been provided and update the appendix title as appropriate.
- The consultant should provide details of any performance criteria relating to fire and life safety.

Example.

If we consider a wet rising main, the consultant may note the following (this is not an exhaustive list);

1. The flow rate at each outlet should be at least ***x*** litres / per minute
2. The water pressure at each outlet should be at least ***x*** Bar pressure

- The consultant should detail the key components of the specific system
- The consultant should detail the specific role of that component within the wider system
- The consultant should detail what would happen should that component fail
- The consultant should list any measures incorporated into the system which assist in the performance or reliability of the particular component

Example.

If we consider a fan used as part of a smoke extraction system, the consultant may add the following information;

DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Fan (add details of specific product as appropriate)	Extraction of smoke and hot gases.	Smoke extraction system would fail. Smoke and hot gases would remain within the fire compartment and/or escape routes. Conditions may become untenable.	The system is provided with a standby fan. The standby fan can achieve the same performance criteria as the primary fan. Upon failure of the primary fan, the standby fan will ramp up and reach the required speed within ***x*** seconds

5 Design Considerations – Guidance Notes

- The consultant must use their knowledge and experience of the specific system to state whether it is suitable for use within tall buildings.
- The consultant must determine what are the key design considerations. This should only be completed for components which require assessment due to the building height.
- The consultant must detail which tests/assessment will be conducted during a full QDR to determine if any systems modifications/enhancements will be made to achieve the required reliability and performance.

Example.

If we consider a pump, used at ground level to impart pressure on the body of water contained within the wet rising main, the consultant may add the following information;

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☐	**NO**	☐
KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT		CONSIDERATION	
	Pump		Can the proposed pump, when located at ground floor, deliver the required pressure at outlets on all floors of the building.	

	CONSIDERATION	TEST/CALCULATION
IDENTIFY WHICH TESTS AND/OR CALCULATIONS WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	Can a single pump at ground floor deliver the required pressure at outlets on all floors of the building.	Hydraulic calculations Review of manufacturers operating guidelines and data sheets

6 Enhanced Performance/Reliability Measures – Guidance Notes

- The concept QDR is used to identify and explain the methodology that will be used to assess the suitability of the minimum requirements of standard guidance when applied to a tall building.
- The concept QDR outlines the methodology that 'will' be used.
- This section requires the consultant to think about (at high level) possible negative outcomes of a test/assessment.
- The consultant must also provide (at high level) viable solutions to resolve any performance/reliability concerns arising from test/assessment outcomes.

Example.

If we continue to consider a pump, used at ground level to impart pressure on the body of water contained within the wet rising main, the consultant may add the following information;

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
The specified pump cannot generate the pressure at floors above ***x*** metres.	An intermediary pump will be provided at floor ***x*** to generate the required pressure at each outlet on this level and above.

7 Impact on Other Systems – Guidance Notes

- The first table is designed to provide information on how the assessed system may affect the performance of other fire and life safety systems should it fail.
- It is not the responsibility of the system designer to review the affected systems. The intent of this section is to highlight where additional consideration is required.

Example.

If we consider a water suppression system, the following information could be entered into the table;

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☒	**NO**	☐
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Smoke ventilation		The smoke extract system may be required to extract a greater volume of smoke if the fire was unsuppressed.	

- The second table is designed to provide information on how the failure of another fire and life safety system may affect the performance of the assessed system.

Example.

If we consider the fire alarm and detection system, the following information could be entered into the table;

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	**NO**	☐
SYSTEM FAILURE	POSSIBLE CONSEQUENCES		CONTINGENCY MEASURES
L5 automatic detection system provided within the protected corridor.	If the detector head should fail to actuate, then a signal would not be sent to activate the smoke extract system within the corridor.		The smoke extraction system will be provided with a manual activation function.

8 Declaration – Guidance Notes

- The consultant completing this form must have a good understanding of the building and its use.
- The consultant must be qualified an experienced to design, review and comment on the proposed system.
- It is the responsibility of the stakeholder detailed in Section 2 to ensure that the person completing the form is suitable to do so.

APPENDIX C

SYSTEM DESIGN INFORMATION FORMS – COMPLETED FORMS

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Paddington Green Police Station – Block I, J and K

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SITE POSTCODE	

2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Fire detection and alarm system (ancillary areas)			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 5839 – Part 1			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS				
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	N/A			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS	N/A			

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Category L2 detection and alarm system.			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Design in accordance with the code which is applicable for buildings over 50m.			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐

KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT	CONSIDERATION
		Design in accordance with the code which is applicable for buildings over 50m.
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION	TEST/CALCULATION
		Design in accordance with the code which is applicable for buildings over 50m.

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Primary power failure	Emergency backup power supply provided by batteries in each unit

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☒	**NO**	☐
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Access control system and door release		Doors would fail to open. There are however manual override buttons at final exits.	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☐	**NO**	☒

SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES

8 Declaration

The information provided within this form will assist in the completion of a Qualitative Design Review (QDR) associated with the project detailed in Section 1.

The signatory of this form confirms the following;

- They are suitably qualified and experienced to provide complete and suitably detailed information
- They are suitably familiar with the project/design to provide complete and suitably detailed information

PROJECT DETAILS	
NAME (PLEASE PRINT)	Wayne Early
SIGNATURE	
DATE	24/10/2022

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COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Fire detection and alarm system (commercial areas)			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 5839-1			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	N/A			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	N/A			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS	N/A			

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Category L2 detection and alarm system.			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Design in accordance with the code which is applicable for buildings over 50m.			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐

KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT	CONSIDERATION
		Design in accordance with the code which is applicable for buildings over 50m.
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION	TEST/CALCULATION
		Design in accordance with the code which is applicable for buildings over 50m.

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Primary power failure	Emergency backup power supply provided by batteries in each unit

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☒	**NO**	☐
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Access control system and door release		Doors would fail to open. There are however manual override buttons at final exits.	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☐	**NO**	☒

SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES

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PROJECT DETAILS	
NAME (PLEASE PRINT)	Wayne Early
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DATE	24/10/2022

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STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Fire detection (for activation of life safety systems)			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 5839-16			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS				
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	N/A			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS	N/A			

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	L5 detection system with no sounders			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Design in accordance with the code which is applicable for buildings over 50m.			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
			Design in accordance with the code which is applicable for buildings over 50m.

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐
KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT		CONSIDERATION	
			Design in accordance with the code which is applicable for buildings over 50m.	
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION		TEST/CALCULATION	
			Design in accordance with the code which is applicable for buildings over 50m.	

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Detector failure	Manual override in the fire fighting stair and at the ground floor building entrance

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☒	**NO**	☐
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Ventilation systems		A delay to smoke ventilation activating	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	**NO**	☐
SYSTEM FAILURE	POSSIBLE CONSEQUENCES		CONTINGENCY MEASURES
Mains Power	System failure		Back-up life safety generator and battery to each detection. Fully addressable fire alarm system.

8 Declaration

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COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Smoke ventilation (within lobbies and corridors)			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS12101 Parts 1 & 3			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	Designed in accordance with the code.			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	BS9991-2021 Draft			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS				

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Smoke clearance system.			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	To be designed in accordance with BS 7974-6			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Primary extract fan	Smoke clearance	Delay in smoke extraction	Standby fan provide

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐

KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT	CONSIDERATION
	Fan	Pressure loss
	General system	Performance during simulation

IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION	TEST/CALCULATION
	Pressure loss	Friction loss calculation, air leakage calculation.
	Performance during simulation	CFD performance criteria which will be agreed with stakeholders prior to simulation.

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Pressure loss	Variable speed fans to increase the volume flow rate as required.

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☒
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	**NO**	☐
SYSTEM FAILURE	POSSIBLE CONSEQUENCES		CONTINGENCY MEASURES
Mains Power	System failure		Back-up life safety generator and battery to each detection. Fully addressable fire alarm system.

8 Declaration

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2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Smoke ventilation (within stairs)			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 12101			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with the code.			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	BS9991-2021 Draft			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS				

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Smoke clearance system			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Designed in accordance with BS 7974			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Automatic opening vent	To provide natural ventilation opening at head of stairs	Natural ventilation opening will not be provided.	The AOV's are spring loaded to fail open.

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐

KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT	CONSIDERATION
	Height of stairs	Chimney effect

IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION	TEST/CALCULATION
	Performance during simulation	CFD performance criteria which will be agreed with stakeholders prior to simulation.

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
There are no proposed design modifications.	

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☒
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	**NO**	☐
SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES	
Mains Power	System failure	Back-up life safety generator and battery to each detection. Fully addressable fire alarm system.	

8 Declaration

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DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Smoke ventilation (within ancillary areas)			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS12101 Parts 1 & 3			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with code.			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	BS 9991-2021 draft			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS				

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Smoke clearance system.			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Designed in accordance with BS7974-part6			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Primary extract fan	Smoke clearance	Delay in smoke extraction	Standby fan provide

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐

KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT	CONSIDERATION
	Fan	Pressure loss
	General system	Performance during simulation

IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION	TEST/CALCULATION
	Pressure loss	Friction loss calculation, air leakage calculation.
	Performance during simulation	CFD performance criteria which will be agreed with stakeholders prior to simulation.

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Pressure loss	Variable speed fans

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☒
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	**NO**	☐
SYSTEM FAILURE	POSSIBLE CONSEQUENCES		CONTINGENCY MEASURES
Mains Power	System failure		Back-up life safety generator and battery to each detection. Fully addressable fire alarm system.

8 Declaration

The information provided within this form will assist in the completion of a Qualitative Design Review (QDR) associated with the project detailed in Section 1.

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3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Suppression System (within residential units)			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 9251 - 2021			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS				
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	N/A			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS				

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Cat 4 - Residential sprinklers			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Code compliant			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Pump set	Water delivery	No water delivered	Duty standby Standby pumps
Water tank	Water storage	Reduction in water delivered	Water tank is replenished from 2 water sources to provide back-up supply.

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐
KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT		CONSIDERATION	
	Pumps		Static pressures	
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE	CONSIDERATION		TEST/CALCULATION	
	Static pressures		Head calculations	

PROPOSED SYSTEM WITHIN A TALL BUILDING.		

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Pump failure	Standby pumps
Power failure	ATS switch to back-up supply

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☒
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Note: the consequence of system failure will not affect performance of any life safety systems within the building.			

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	**NO**	☐
SYSTEM FAILURE	POSSIBLE CONSEQUENCES		CONTINGENCY MEASURES
Mains Power	System failure		Back-up life safety generator and battery to each detection. Fully addressable fire alarm system.

8 Declaration

The information provided within this form will assist in the completion of a Qualitative Design Review (QDR) associated with the project detailed in Section 1.

The signatory of this form confirms the following;

- They are suitably qualified and experienced to provide complete and suitably detailed information
- They are suitably familiar with the project/design to provide complete and suitably detailed information

PROJECT DETAILS	
NAME (PLEASE PRINT)	Wayne Early
SIGNATURE	
DATE	24/10/2022

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BERKELEY GROUP

Paddington Green Police Station – Block I, J and K

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SITE ADDRESS (LINE 2)	Block I, J and K
TOWN/CITY	
COUNTY	
SITE POSTCODE	

2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Suppression System (within ancillary areas)			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 12845			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	Code compliant			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	N/A			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS				

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Commercial sprinkler system			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Code compliant.			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Pump set	Water delivery	No water delivered	Duty standby Standby pumps
Water tank	Water storage	Reduction in water delivered	Water tank is replenished from 2 water sources to provide back-up supply.

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐
KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT		CONSIDERATION	
	Pumps		Static pressures	
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE	CONSIDERATION		TEST/CALCULATION	
	Static pressures		Head calculations	

PROPOSED SYSTEM WITHIN A TALL BUILDING.		

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Pump failure	Standby pumps
Power failure	ATS switch to back-up supply

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	NO	☐
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Note: the consequence of system failure will not affect performance of any life safety systems within the building.			

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	NO	☐

SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES
Mains Power	System failure	Back-up life safety generator and battery to each detection. Fully addressable fire alarm system.

8 Declaration

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PROJECT DETAILS	
NAME (PLEASE PRINT)	Wayne Early
SIGNATURE	
DATE	24/10/2022

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Paddington Green Police Station – Block I, J and K

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SITE POSTCODE	

2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Suppression System (within commercial areas)			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 12845			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS				
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	N/A			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS				

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Commercial area sprinkler system.			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Code compliant			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Pump set	Water delivery	No water delivered	Duty standby Standby pumps
Water tank	Water storage	Reduction in water delivered	Water tank is replenished from 2 water sources to provide back-up supply.

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐

KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT	CONSIDERATION
	Pumps	Static pressures

IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE	CONSIDERATION	TEST/CALCULATION
	Static pressures	Head calculations

PROPOSED SYSTEM WITHIN A TALL BUILDING.		

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Pump failure	Standby pumps
Power failure	ATS switch to back-up supply

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☐
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Note: the consequence of system failure will not affect performance of any life safety systems within the building.			

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	**NO**	☐

SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES
Mains Power	System failure	Back-up life safety generator and battery to each detection. Fully addressable fire alarm system.

8 Declaration

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PROJECT DETAILS	
NAME (PLEASE PRINT)	
SIGNATURE	
DATE	

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2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Firefighting / Evacuation Lifts			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS EN 81-72 BS 9999			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with the codes.			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	BS 9991-2021 Draft BS EN 81-20 BS 5839-9			

IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with the codes.			

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Vertical transportation for firefighting and evacuation			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Designed in accordance with the codes.			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Firefighting lift	A lift with protection, controls and signals which enable it to be used under the exclusive control of the firefighters	Power failure - Unable to be used by firefighting services	Firefighting lifts are being backed up by the life safety generator
Evacuation lift	A lift designed to be used in an evacuation situation for people with disability or requiring assistance, under the control of specially trained people	Power failure - Unable to be used to evacuate people with disability or requiring assistance	Evacuation lifts are being backed up by the life safety generator

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐
	COMPONENT		CONSIDERATION	

KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	Primary and secondary power supplies and automatic transfer switches (applicable for both firefighting and evacuation lifts)	Both sources of power and any automatic switch gear to be located in a fire protected area
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION	TEST/CALCULATION
	Periodic testing	Test regime in accordance with requirements of BS 9999

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
There are no proposed design modifications.	

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☒
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	**NO**	☐

SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES
Mains power	System failure	Back-up life safety generator

8 Declaration

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PROJECT DETAILS	
NAME (PLEASE PRINT)	Silviu Sidovici
SIGNATURE	
DATE	27/10/2022

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Paddington Green Police Station – Block I, J and K

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2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Firefighting main and associated plant			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 9990			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	N/A			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	BS9991-2021 Draft			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS				

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Wet Riser to all Blocks			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Design as per code requirements			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Pump set	Water delivery	No water delivered	Duty standby Standby pumps
Water tank	Water storage	Reduction in water delivered	Water tank is replenished from 2 water sources to provide back-up supply. Emergency inlet also provided.

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐
KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT		CONSIDERATION	
	Pumps		Static pressures	
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE	CONSIDERATION		TEST/CALCULATION	
	Static pressures		Head calculations	

PROPOSED SYSTEM WITHIN A TALL BUILDING.		

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Pump failure	Standby pumps
Power failure	ATS switch to back-up supply

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☒
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Note: the consequence of system failure will not affect performance of any life safety systems within the building.			

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☒	**NO**	☐

SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES
Mains Power	System failure	Back-up life safety generator and battery to each detection. Fully addressable fire alarm system.

8 Declaration

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PROJECT DETAILS	
NAME (PLEASE PRINT)	Wayne Early
SIGNATURE	
DATE	24/10/2022

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BERKELEY GROUP

Paddington Green Police Station – Block I, J and K

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SITE POSTCODE	

2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	Structural engineer
COMPANY NAME	Walsh
CONSULTANT NAME	Stephen Gibbs / Tim Finbow
CONTACT NUMBER	0207 089 6746 / 0207 089 6763
CONTACT EMAIL	Stephen.Gibbs@walsh.co.uk / Tim.Finbow@walsh.co.uk

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Building Structure			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	The design is compliant with BS EN 1992-1-2:2004+A1:2019			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS				
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	N/A			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS				

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	The slabs beams and columns predominantly support the vertical load of the structure. Lift and stair cores provide lateral stability.			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☒	**NO**	☐
SYSTEM PERFORMANCE REQUIREMENTS	• Eurocodes and British Standards • BS EN 1990:2002 • BS EN 1991-1-1:2002 • BS EN 1991-1-2:2002 • BS EN 1991-1-7:2006 • BS EN 1992-1-1:2004 • BS EN 1992-1-2:2004 • CIRIA Report 102-Design of shear wall buildings • CIRIA Technical Note 107-Design for movement in Buildings • CIRIA Technical Note 133-Guidelines for checking computer analysis of building structures • Building Regulations-Approved Document A: Structures • CCIP-050-National Structural Concrete Specification for Building Construction • Concrete Society TR 43-Post-Tensioned Concrete Floors, Design Handbook • Concrete Society TR49-Design Guidance for High Strength Concrete			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Columns	Supports vertical load	Localised collapse	Each build is classified as Class 3 in accordance with the Buildings Regulations Approved Document A. As concrete structures, each frame will be designed in accordance with section A.4 'Recommended Strategies' of BS EN 1991-1-7 (Annex A) to provide robust structure.

			Each structure will be designed to resist the notional horizontal load defined in BS EN 1991-1-6. Horizontal and vertical ties will be provided as per section A.5 and A.6 of BS EN 1991-1-7 (annex A). Further to these basic design principles, the layout of each frame will be arranged, within the confines of the planning approval, in such a way that minimises the risk of disproportionate collapse.
Transfer structure	Horizontal offset of columns	Localised collapse	Wherever possible the column grid will be taken through the superstructure down to foundations with lower levels planned around the structural arrangement. All elements contributing to the stability of the building will also be taken from roof to foundation level. The final building layout will then be examined to identify any residual high-risk elements, the failure of which would result in collapse of 70m^2 or more of structure. Therefore, transfer elements will be design as "key elements" as per section A.8 of BS EN 1991-1-7 (annex A).

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐
KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT		CONSIDERATION	
	Design of core stability system		Check of lateral frequency	
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION		TEST/CALCULATION	
	Check of lateral frequency		Modelling using ETABS	

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
Modelling demonstrates are of high stress within structural elements	Enhance frame based upon applied stresses

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☒
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Note: the consequence of system failure is building collapse which is over and above the failure of any individual system.			

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☐	**NO**	☒
SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES	
Note: The structural frames fire integrity is not dependent upon any other fire life safety system for example the structural frames integrity is maintain even with an unsuppressed fire.			

8 Declaration

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- They are suitably familiar with the project/design to provide complete and suitably detailed information

PROJECT DETAILS	
NAME (PLEASE PRINT)	Stephen Gibbs
SIGNATURE	
DATE	17/10/2022

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Paddington Green Police Station – Block I, J and K

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SITE ADDRESS (LINE 2)	Block I, J and K
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SITE POSTCODE	

2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Emergency power supplies			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 8519 BS EN 12101-10 BS 7671 BS EN 60947 BS 7346-8			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with the codes.			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	BS 9991-2021 Draft			

IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with the codes.			

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Life safety systems back-up			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Designed in accordance with the codes.			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Diesel generator	To provide secondary power supply to life safety systems	No power to life safety systems	Regular testing and maintenance

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐
KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT		CONSIDERATION	
	Furthest roof ATS		Voltage drop	
	CONSIDERATION		TEST/CALCULATION	

IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	Generator and ATS performance	Periodic testing and maintenance

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
There are no proposed design modifications.	

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☒	**NO**	☐
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Firefighting lifts		No back-up power to firefighting lifts	
Sprinklers and wet risers pumps		No back-up power to pumps	
Smoke extract systems		No back-up power to smoke fans	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☐	**NO**	☒

SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES

8 Declaration

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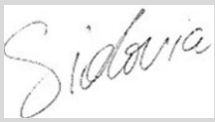
PROJECT DETAILS	
NAME (PLEASE PRINT)	Silviu Sidovici
SIGNATURE	
DATE	27/10/2022

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SITE ADDRESS (LINE 1)	Paddington Green Police Station
SITE ADDRESS (LINE 2)	Block I, J and K
TOWN/CITY	
COUNTY	
SITE POSTCODE	

2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Security systems			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 8220			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with the codes.			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	BS 9991-2021 Draft			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with the codes.			

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Security systems – access control systems			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS				

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Keypad/fobs	Residents access in the building	No access to common areas in the building	To be confirmed at the next design stage
Audio/video entry panels	Residents access in the building	No access in the building	To be confirmed at the next design stage

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐

KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT	CONSIDERATION
	Main entrance panel	Audio/video type with fob reader

IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION	TEST/CALCULATION
	Correct functionality	Periodic inspections/testing

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
There are no proposed design modifications.	

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☒
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☐	**NO**	☒
SYSTEM FAILURE	POSSIBLE CONSEQUENCES		CONTINGENCY MEASURES

8 Declaration

The information provided within this form will assist in the completion of a Qualitative Design Review (QDR) associated with the project detailed in Section 1.

The signatory of this form confirms the following;

- They are suitably qualified and experienced to provide complete and suitably detailed information
- They are suitably familiar with the project/design to provide complete and suitably detailed information

PROJECT DETAILS	
NAME (PLEASE PRINT)	Silviu Sidovici
SIGNATURE	
DATE	27/10/2022

AESG

BERKELEY GROUP

Paddington Green Police Station – Block I, J and K

Qualitative Design Review – Information Request Form

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1 Project Information

PROJECT DETAILS	
SITE ADDRESS (LINE 1)	Paddington Green Police Station
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2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Remote building management system			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 9991-2021 Draft			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with the code.			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN				
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☐	**NO**	☐
COMMENTS				

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	BMS - Microprocessor based automatic control to monitor and control central plant and common systems			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS				

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Automatic evacuation signal	Automatic evacuation operation	No signal from BMS	Evacuation lift switch

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐
KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT		CONSIDERATION	
	Individual BMS contactor on equipment		Hard-wired communication LAN	
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION		TEST/CALCULATION	
	System faults		Periodic system diagnostics	

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
There are no proposed design modifications.	

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☐
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	
Automatic evacuation operation		No automatic evacuation signal	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☐	**NO**	☒

SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES

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PROJECT DETAILS	
NAME (PLEASE PRINT)	Silviu Sidovici
SIGNATURE	
DATE	27/10/2022

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BERKELEY GROUP

Paddington Green Police Station – Block I, J and K

Qualitative Design Review – Information Request Form

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2 Stakeholder Information

STAKEHOLDER DETAILS	
DESIGN DISCIPLINE	MEP
COMPANY NAME	Buro Happold
CONSULTANT NAME	Silviu Sidovici / Wayne Early
CONTACT NUMBER	0207 927 9700
CONTACT EMAIL	Silviu.Sidovici@BuroHappold.com / Wayne.Early@BuroHappold.com

3 Basis of System Design

DESIGN GUIDANCE DETAILS				
SYSTEM BEING ASSESSED	Emergency lighting			
DESIGN GUIDANCE USED AS THE BASIS OF THE FIRE STRATEGY	BS 5266-1			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐
COMMENTS	To be designed in accordance with the code.			
ADDITIONAL GUIDANCE USED FOR SYSTEM DESIGN	BS 7671 BS EN 60243			
IS THE SYSTEM DESIGN COMPLIANT WITH THIS GUIDANCE DOCUMENT/S	**YES**	☒	**NO**	☐

COMMENTS	To be designed in accordance with the code.

4 System Design Summary

SYSTEM DESIGN DETAILS				
DESCRIPTION OF SYSTEM	Emergency lighting to common escape routes and staircases			
SYSTEM DESIGN DRAWING/S ATTACHED WITHIN APPENDICES	**YES**	☐	**NO**	☒
SYSTEM PERFORMANCE REQUIREMENTS	Designed in accordance with BS 5266-1.			

KEY DESIGN COMPONENTS			
DESCRIPTION OF COMPONENT	PURPOSE OF COMPONENT	CONSEQUENCE OF FAILURE	PERFORMANCE / RELIABILITY MEASURES IN STANDARD DESIGN
Emergency luminaires	Emergency lighting during an evacuation	No visibility in escape routes	Battery back-up integral to the luminaire

5 Design Considerations

DESIGN CONSIDERATIONS				
IS THE SYSTEM SUITABLE FOR USE IN TALL BUILDINGS (> 50m)	**YES**	☒	**NO**	☐
KEY DESIGN CONSIDERATIONS OF IMPLEMENTATION WITHIN A TALL BUILDING	COMPONENT		CONSIDERATION	
	Emergency luminaire		Integral battery back-up	
IDENTIFY WHICH TESTS, CALCULATIONS AND/OR STUDIES WILL BE USED TO ASSESS THE PERFORMANCE OF THE PROPOSED SYSTEM WITHIN A TALL BUILDING.	CONSIDERATION		TEST/CALCULATION	
	Routine maintenance and testing		Local test key switches or addressable self-test system	

6 Enhanced Performance/Reliability Measures

DESIGN MODIFICATIONS	
POSSIBLE SCENARIO	POSSIBLE SOLUTION
There are no proposed design modifications.	

7 System Collaboration

WOULD THE FAILURE OF THE ASSESSED SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF OTHER FIRE AND LIFE SAFETY SYSTEMS?			
YES	☐	**NO**	☒
SYSTEM EFFECTED		POSSIBLE CONSEQUENCES	

WOULD THE FAILURE OF ANOTHER FIRE AND LIFE SAFETY SYSTEM EFFECT THE PERFORMANCE / RELIABILITY OF THE ASSESSED SYSTEM?			
YES	☐	**NO**	☒

SYSTEM FAILURE	POSSIBLE CONSEQUENCES	CONTINGENCY MEASURES

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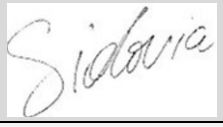
PROJECT DETAILS	
NAME (PLEASE PRINT)	Silviu Sidovici
SIGNATURE	
DATE	27/10/2022