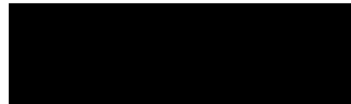




EUROPEAN CENTRAL BANK
EUROSYSTEM



Project Charter

ERI Energy Resilience Improvement

Date: 20/01/2022

Doc. Version: 02.0



ECB template v1.1

This template is based on Open PM² v0.9

Document Control Information

Settings	Value
Document Title:	Project Charter
Project Title:	ERI Energy Resilience Improvement
Document Author:	[REDACTED]
Service / Project Owner:	[REDACTED]
Solution Provider:	[REDACTED]
Project Manager:	[REDACTED]
Doc. Version:	0.2
Confidentiality:	ECB-Restricted
Date:	20/01/2022

Project Information

Settings	Value
Idea Owner	[REDACTED]
Business Portfolio	Changing the Bank
Strategic Goal	Resilience – Promote organisational resilience against high-impact scenarios of non-financial risks
Responsible Unit	[REDACTED]
Planned Start Date	15 June 2019
Planned Start Construction Procurement	01 November 2021
Planned Practical Completion	30 December 2023

Document Approver(s) and Reviewer(s):

NOTE: All Approvers are required. Records of each approver must be maintained. All Reviewers in the list are considered required unless explicitly listed as Optional.

Name	Role	Action	Date
[REDACTED]	[REDACTED]	Reviewed	24 Jan 2022
[REDACTED]	[REDACTED]	< Review >	24 Jan 2022
[REDACTED]	[REDACTED]	<Approve / Review >	24 Jan 2022
[REDACTED]	[REDACTED]	< Review >	24 Jan 2022
[REDACTED]	[REDACTED]	< Review >	
[REDACTED]	[REDACTED]	< Review >	
[REDACTED]	[REDACTED]	<Approve / Review >	24 Jan 2022
[REDACTED]	[REDACTED]	< Review >	24 Jan 2022
[REDACTED]	[REDACTED]	Approve	24 Jan 2022

Note: BCR#03 changes shown blue. All previous changes incorporated in black.

Note: BCR#02 - Changes shown in colour, not in track changes mode for clarity

PSC355 Mon 19th July, Submission Mon 05 July

B2 – refers to the changed design strategy [REDACTED] this BCR#02

Document history:

The Document Author is authorized to make the following types of changes to the document without requiring that the document be re-approved:

- Editorial, formatting, and spelling
- Clarification

To request a change to this document, contact the Document Author or Owner.

Changes to this document are summarized in the following table in reverse chronological order (latest version first).

Revision	Date	Created by	Short Description of Changes
0.2	20/01/2022	[REDACTED]	BCR#03 Scope updated [REDACTED]
2.0	30/06/21	[REDACTED]	[REDACTED]
0.3	28/02/21	[REDACTED]	Strategy adaptation – Consider Quick Wins – Evaluate alternatives with potential to further reduce scope before proceeding with remaining design and construction.
0.2	30/11/20	[REDACTED]	Strategy proposal – include tender specifications and construction design in planning phase to keep momentum while allowing procurement to start based on more detailed information.
0.1	11/05/20	[REDACTED]	Base document for the preparation of the BCR #01 – Extend Planning until September 2020. Change to option C5 “Container” to allow later start of procurements and minimise costs due to groundwork risks.
0.0	01/07/19	[REDACTED]	PSC Approval granted 13 September 2019 – RfP – ready for Planning

DARWIN: Document Location

The latest version of this controlled document is stored in.

[PRECPM 220120 PCS MB ERI ECB Project Charter_RfP BCR03 for \[REDACTED\]](#)

TABLE OF CONTENTS

1	MANAGEMENT SUMMARY	5
1.1	Ready for Planning.....	5
1.2	Ready for Executing	8
2	CONSIDERATIONS ON THE BUSINESS CASE	10
2.1	High-level Summary.....	10
2.2	Cost Benefit Analysis.....	11
2.3	Scope	12
2.3.1	Includes ("IN" Scope)	12
2.3.2	Excludes ("OUT" Scope)	13
2.4	Success Criteria	14
2.5	High level Business/User Requirements.....	15
2.6	Deliverables	15
2.7	Constraints.....	16
2.8	Assumptions	17
2.9	Risks	19
2.10	Synergies / Dependencies.....	21
2.11	Impact on existing business and/or portfolio strategies	22
2.12	Impact on IT Architecture landscape	22
3	COST, TIMING AND RESOURCES	23
3.1	Cost	23
3.2	Timing and Milestones.....	25
3.3	Planned Resources.....	27
4	APPROACH	29
4.1	Sourcing Strategy.....	29
4.2	Procurement Strategy.....	29
4.3	Project strategy and development approach	30
4.4	Service Approach	30
4.5	Change Management	31
4.5.1	Project Change.....	31
4.5.2	Organisational Change.....	31
4.6	Lessons learnt from previous projects.....	31
5	GOVERNANCE AND STAKEHOLDERS	32
5.1	Structure	32
5.2	Roles and Responsibilities.....	33
5.3	Other Stakeholders.....	34
	APPENDIX 1: REFERENCES AND RELATED DOCUMENTS.....	35

1 MANAGEMENT SUMMARY

1.1 Ready for Planning

This project charter requests approval for the **updated scope** for the execution phase of the MB Energy Resilience Improvement project, (MB ERI) [REDACTED]

Summary BCR#03 – updated scope for execution phase.

The scope has been updated to include the items now identified during [REDACTED] further engineering investigations to rectify deficiencies in the life safety power supply and the other main building power supplies for essential consumers e.g. the data centre, I.T and security Infrastructure.

The major items are:

- a) Works to maintain the operation of the computer centre in accordance with the NEP specified requirements, the need of another emergency power generator and interim measures to mitigate potential risks and extended power outages during the reconstruction phase.
- b) Additional engineering works required by [REDACTED] to clearly align all interfaces before starting construction.
- c) More robust control systems to rectify the switching deficiencies following the review workshops with the accredited bodies [REDACTED]
- d) Strengthening the on-site team by appointing an experienced overall site management company to manage the interfaces between the approx. 20 contractors [REDACTED]
- e) Works to prevent domino-effect power shut-offs by rectifying the further deficiencies identified in the selective protection of the high voltage systems during the ongoing site surveys.
- f) Replacement of key power security elements where End of Operational life has now been exceeded.

Cost – the overall cost will be € 12,113,703.01

Timescale – remains unchanged – completion End 2023.

Human Resources – remains unchanged – rebalanced between the years to reflect procurement and contract award progress,

Risk – will be further mitigated by increasing the scope of site management as above and where possible using the original suppliers for software modifications for the existing generators and high voltage switchgear.

Summary BCR#02 – finalisation of planning and execution phase.

BCR#02 seeks approval for an adaptation of the project strategy to reflect developments over the last year.

A separate workstream “Quick-wins” has been established to prioritise the 22 significant defects which pose a legal risk in addition to the identified operational risk. This is expected to be completed by Mid-2021.

In addition, the experience with Covid-19 and remote working, may make short planned shutdowns for parts of the building during reconstruction now possible. It is proposed to investigate if this can reduce both the overall scope and the risk during switchovers.

It is now proposed to start the further detailed engineering and executing phase in August 2021, taking into consideration the available information from the Quick Wins workstream. This will allow the start of procurement procedures with budget approval for the construction works packages.

This BCR#02 seeks approval to:

- Evaluate synergies from the Quick wins and develop the design alternative B2 to generate overall scope reductions.
- Incorporate lessons learned from the performance of suppliers in the design phases to date.
- [REDACTED]
- Incorporate lessons learned during remote working due to Covid where these can reduce the scope of the project, e.g. by now accepting some planned building shutdowns.
- Execute design alternative B2.

Background:

In BCR#01 (June 2020) the scope of the planning phase was reduced to allow a review of the design proposals, due to the complexity of the proposed cellar construction as an extension of the loading area, and associated cost risks, while minimising sunk costs which would have been incurred by further developing a design in this direction. At that time, it was decided to analyse an alternative design solution "C5 Container option" and report back to the PSC in September 2020. The additional design costs for reworking are currently €0.3 Million, which are compensated by predicted later design and construction cost savings of >€4.0 Million.

The overall project schedule has been delayed, mainly due to the loss of key personnel both ECB internally and from external suppliers, resulting in their non-performance, so that the results of the LP3 basic engineering were only available in December 2020. These have been verified and require some reworking with expected completion End March 2021.

Based on the now proposed design solution "C5 Container" the cost risk can be minimised. Also, due to off-site manufacturing delays to the overall project timeline can be partly compensated.

It is now recommended not to pursue the design option C5 further due to the scope required to allow rebuilding while avoiding any planned shutdowns, in particular, cost and time savings would be partially negated due to:

- Costs associated with the provision of back-up infrastructure in the MB site
- The associated landscaping and site infrastructure works
- The associated additional fee surcharges as per the General Planner Framework Contract.

Option	Risk SV1 Completion	Risk SV2 Completion	Risk AV Completion	Risk SV1 Construction	Risk SV2 Construction	Risk AV Construction	Cost* estimate	Time	Risk product
A) TF							3 M € ¹	06/2021	144
B) B2 recommended							10 M € ²	12/2023	12
C) C5 (original design strategy)							21 M € ³	12/2024	3
D) C6 (cost saving option)							14 M € ³	06/2024	6

During the past planning phase, some execution works have been carried out where these could be started immediately without the need for detailed design in order to progress the remediation of defects at speed wherever possible.

Following the decision from [REDACTED] March 2020, heating resilience will be improved off-site and thus removed from the project scope (5% - €0.8 Million)

[REDACTED]

The “domino-effect” of automatic power switching caused by an electrical fault could currently lead to large parts or all of the MB being without operational power. Not only can this impact on operations but defects in the operational power system can impact on the life-safety power systems.

This is based on the findings of the accredited body TÜV Rheinland during the first cycle of recurrent checks at the MB in February 2018. At that time, approximately 1,800 issues were identified, some of which could be rectified quickly (currently approx. 60%), but some required detailed analysis, therefore an initiation phase was launched to assess the scope of works required. Due to the scope and complexity of the works required, these were assessed by external consultants, [REDACTED] for power resilience and [REDACTED] and general planner. Note: In the 2nd cycle of recurring checks the number of defects was reduced to 654 via the preliminary works described above and the quick wins workstream.

The works proposed focus on simplifying the back-up systems to make these more resilient by minimising the complexity and potential for interactions between the systems.

The MB Power systems are designed to work as follows.

[REDACTED]

utility supplier infrastructure.

There are [REDACTED] generators which serve a mixture of the essential systems.

- SV1 – Life Safety (essential systems for fire-fighting and evacuation)
- SV2 – ECB Operational Power [REDACTED]

[REDACTED]

Operational testing has shown that interactions between the systems can lead to failure of all systems under some test scenarios.

Remediation of defects to the life safety (SV1) systems is a legal requirement. This system allows safe evacuation of the buildings. [REDACTED]

[REDACTED]

The current design proposals are based on the ECB operational power (SV2) user requirements which allow the ECB [REDACTED]

[REDACTED]

(Heating works removed from the project scope as part of BCR#01 approved in June 2020.)

This project charter is based on the results of two separate stages in the initiation phase.

In the first stage, a strategy (road-map) was produced by the power resilience consultant [REDACTED] in order to confirm to the TÜV by 31 August 2018 that the ECB was actively addressing the findings of the TÜV reports from February 2018 regarding defects in the main electrical systems. During this stage, 4 possible design solutions were evaluated, 2 however would not have led to code compliant systems and were therefore not further considered in the feasibility phase. Another option investigated (discrete location of back-up systems) was discounted as providing unnecessary expensive resilience in excess of the original NEP building specifications. Therefore, the solution is option "C" from the road map, physically separating the SV1 and SV2 systems, with back-up for the construction phase. Update: Following revision of the fire strategy document and proposal to accept some planned shutdowns, it is now recommended to follow proposal B2.

In the feasibility phase (comparable to the German HOAI Design Phase 2) [REDACTED] have evaluated the installations on-site, the necessary electrical load demands and the findings of the reports from TÜV, as well as the defects highlighted in the now available NEP electrical network protection and selectivity analyses. They have proposed design solutions to remedy the defects noted. In summary, the existing electrical systems will be modified to reduce complexity and the potential for unwanted interactions. [REDACTED]

[REDACTED] he design solutions proposed have been chosen to be constructed in parallel to the operation of the MB, minimising the need for power shutdowns or protracted building closures.

In the planning phase, these design proposals will be further developed to achieve better cost and time certainty.

Further options regarding the location of the Heating Plantroom and the scope of additional Back-up Generation for ECB Operational resilience during the construction and rebuilding phase, will be evaluated on a cost/ benefit basis and a final scope for construction proposed.

1.2 Ready for Executing

The execution phase is the subject of this updated project charter ([BCR#03 - Ready for Execution](#)) by [January 2022](#), and project completion by End 2023.

[REDACTED]

The costs exclude general contingencies included in the consultant's calculations, as project specific items such as operational back-up and security costs have been included as separate line items.

During the execution phase, the engineering will be finalised, including contract award and contractor' shop drawings.

The Project Steering Committee is invited to:

- 1. Approve the Boundary Change Request for the MB Energy Resilience (MB ERI) Project as medium project with the corresponding baseline for the executing phase, implying:**
 - no change to project timeline (approved end date 31.12.2023);
 - a financial budget of EUR 12,113,702.69 (previously EUR 8,183,312.69); of which EUR 113,703.01 in 2021 and EUR 7,901,902.77 in 2022 (previously 6,269,315.01), and EUR 4,098,096.91 in 2023 (previously 899,706.91);
 - no changes to the person days resource allocation (approved 2335 ECB person days);
- 2. [REDACTED]**
[REDACTED]
[REDACTED]
[REDACTED] The provision of EUR 12 million has been recorded against 2021 expenditure and will serve to cover the financial needs (as described in point 1 above) for years 2022 and 2023 respectively;
- 3. Take note that there is no change to the PSG Chairperson (approved PSG Chairperson [REDACTED])**
- 4. Take note that there is no change to signing powers;**
- 5. Take note that there is no change to the contribution to the function according to the Eurosystem Functions Grid: C 13.05.02;**
- 6. Take note that there is no change to the risk situation.**

2 CONSIDERATIONS ON THE BUSINESS CASE

2.1 High-level Summary

The “domino-effect” of incorrect automatic power switching caused by an electrical fault could currently lead to large parts or all of the MB being without operational power.

During the recurrent statutory checks in February 2018, the accredited body TÜV Rheinland discovered systematic defects in the life-safety power systems of the MB (SV1 system). Defects were also noted in the design and construction of the ECB operational back-up power network (SV2 System) which impacts both on the operation of these systems, and in some cases impact on the operation of the SV1 systems. In total approximately 1800 issues were identified. Update 2021 – in the 2nd recurring check the number of defects found reduced to 654. The risk issues with operational power remain unchanged.

These shortcomings were also confirmed in building performance tests in early 2018. These functional tests are carried out to prove that automatic standby systems work when required. In two cases, the test scenarios resulted in power outages of the whole MB site. These could only be rectified due to the unusually large number of highly qualified personnel from the FM contractor and equipment manufacturers who attended site for the tests at that time. [REDACTED]

Immediate mitigation measures have been carried out where possible to provide operational compensation measures. Some of these have reduced the resilience of the ECB back-up power systems as e.g. [REDACTED]

Further investigations have revealed deficiencies in the electrical protection of the internal power grid, bearing the risk of a complete outage of the electrical power supply in case of short circuit, as opposed to limiting the outage to a local floor, equipment or area. Due to the extent and complexity of the systems, time to identify and repair the fault would likely take hours before power could be restored.

The deadline for the remediation of defects was set by the TÜV as 31 August 2018- later extended to 15 October 2018. These deadlines could not be achieved due to the scope of works involved and the impact on operations at the MB.

The user requirements for the ECB back-up power systems (SV2) have been confirmed with [REDACTED]. In summary, no change is required from the original NEP Building specifications where during a power failure essential operation such as the data centre and key business areas (approximately [REDACTED] workspaces) should main operational for [REDACTED]

Regarding heating resilience – failures in the district heating network have become more common in the last 3 years. An interim measure is being constructed as part of the MBIP project to enable a short-term fix with a mobile boiler when required. As this would lead to up to 2 days without heating, and as other current external temporary back-up measures will likely cease during 2021, longer term back-up solutions are being investigated together with the local energy

utility [REDACTED]. In the first instance, a back-up boiler will be permanently installed on the MB site adjacent to the loading area.

2.2 Cost Benefit Analysis

[REDACTED]

[REDACTED]

Moreover, non-availability of power due to fire in some locations would currently cause parts of the building to be evacuated and the “domino-effect” of power switching caused by an electrical fault would currently lead to large parts or all of the MB being without operational power. A complete outage of the electrical power supply at any other time could [REDACTED]

The design solutions proposed seek to provide systems which comply with all current legal and technical requirements and meet the ECB need for operational back-up and resilience.

The currently estimated project costs are higher than if the works were to be carried out without live building operations i.e. on a normal construction site, where the power could be repeatedly switched off for modifications and testing for extended periods. The costs are, however, considered lower than having to relocate all staff to alternative buildings which would have to be upgraded to ECB security standards and rented for at least several months. Besides, it is unlikely that a single site would be available to accommodate all MB Staff.

Finally, security measures have been foreseen to minimise the potential risks of the construction works on the MB site.

The above aspects have been considered in the cost and time estimates.

Total Cost of Ownership – as the systems to be installed mostly replace existing systems no significant changes are foreseen to the operating and running costs. Operating costs for the new generator will be offset by the reduced inspection and maintenance costs for the emergency lighting.

Strategy change - Option B2 accepts that parts of the MB will be powered down during reconstruction. This minimises the scope of parallel infrastructure, associated building and earthworks and need for site security.

Project Description

2.3 Scope

2.3.1 Includes ("IN" Scope)

Following the completion of the Detailed Planning (LP3) and the preceding Initiation Phase (Feasibility Studies by the companies [REDACTED] the following works are recommended as the agreed strategy for the remediation of findings from the TÜV report regarding the buildings emergency and backup power systems.

- The feasibility study proposes those alternatives which are considered achievable in the context of implementing into live systems without the need for prolonged shut-down of the MB site. B2 – Planned Shut-downs will be accepted for office areas [REDACTED]
- Interim measures to minimise power outages at the MB such as: systems constructed and tested in parallel before switchover to live operation; increased FM operator team during construction to enable manual switching. B2 – scope will be reduced as above.
- Upgrades to Life Safety Power Systems (SV1) to meet code compliance and remedy defects identified during both building performance testing and the recurring checks by the accredited body TÜV Rheinland in February 2018/ February 2021. Considering possible synergies which can be achieved during the Quick wins task force until Mid-2021.
- [REDACTED]
- Upgrades to all electrical systems to remedy defects in network protection and selectivity which could only be identified following the provision of the final power safety calculations (outstanding works from the NEP project, completed via the substitute contractors [REDACTED] B2 – works will only be carried out on existing systems where these are not to be modified as part of the B2 reconstruction. The final function will only be available following commissioning B2.
- Modifications to electrical systems to ensure fire separation between SV1 and other systems where this has been identified as a defect.
- Allowances for weekend and night works to minimise impact on MB operations. B2 – scope minimised due to acceptance of planned shut-downs
- Upgrades to Power systems to enable faster evacuation – [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- Temporary site installation adjacent to the [REDACTED]
- Fixed and operational security during construction works. B2 – scope minimised to be covered by existing security patrols
- Fees for building approvals
- An overall Risk consultant, who will also cover risk management for other PRE tasks. B2 – now removed from scope due to less working on live systems, replaced by external project management support to coordinate the contractors and framework contractors. BCR#03 – to be strengthened by overall site management due to high number of package contractors and interfaces.

- OSH coordinator for the works, training and documentation.

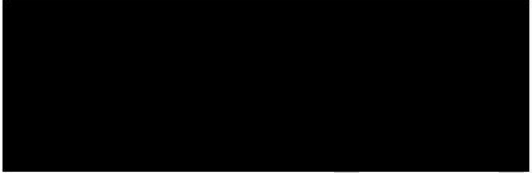



2.3.2 Excludes ("OUT" Scope) vs PID

- Scope change or extension to ECB operational resilience back-up power systems (SV2) – no change to the business areas defined as essential as part of the NEP user requirements (NEP Building Specifications 2004) This was confirmed in the PSC June 2019.
- [REDACTED]
- [REDACTED]
- [REDACTED] – [REDACTED]
- Upgrades to address the TÜV findings on emergency lighting – covered under the separate project “MBEL – Main Building Emergency Lighting” B2 – reintegration of emergency lighting now included to replace the existing interim approval and minimise the current additional inspection and maintenance costs .
- Capacity increase to cover future buildings or growth modules on the MB site.
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

The following were part of the preceding Phases – “Road Map” and “Feasibility Study” and are included here for information only as these have been completed.

- an agreed strategy for the remediation of findings from the TÜV report regarding the buildings emergency power systems (Roadmap)
- a Feasibility study indicating potential solutions to improve the power resilience with the analysis of alternatives
- a feasibility study for the improvement of the resilience of the district heating supply.
- A Cost and time estimation for those alternatives which are considered achievable in the context of implementing into live systems without the need for prolonged shut-down of the MB site.
- A Risk analysis, as all potential measures are likely to entail some risk if and when being integrated into the running systems.
- a recommendation for a technical solution [REDACTED] [REDACTED] accepting the current temporary risk as a permanent risk if the costs and/or potential risks of implementation should prove prohibitive.
- Evaluation of potential risks in the overall electrical protection systems (e.g. fuses and circuit breakers) and proposals for solutions where needed to maintain health and safety.

2.4 Success Criteria

#	Project objectives	Success criteria
1	Compliant electrical systems for life safety. (SV1)	- Certification of compliance by the accredited body TÜV Rheinland by End 2023
1.1	Obtain approval from the Building Authorities	-  Their next active involvement will be following confirmation by the TÜV of the completion of the remediation works.
1.2	Compliance with ECB resilience requirements for back-up power supplies (SV2) to essential users	- Functional testing and metering testing following simulated failures – annual Building Performance Test
1.3	Modify electrical systems to provide discrete network protection and selectivity.	- Certification by Independent Electrical Accredited Body by End 2023
1.4	Minimum Downtime during Construction works. - Risk and design analysis	- B2 - planned interruptions for max 10 working days will be implemented to minimise risk and associated scope of compensation measures. Coordination with  will be via the  coordination meetings and project specific sub-groups. No unplanned interruptions. Where planned interruptions are necessary, then of a scale which can be compensated by planned operational measures agreed in advance with 
2	Compliance with ECB resilience requirements for heating	- Successful functional testing following simulated failures – annual Building Performance Test. This objective has now successfully been tested.

2.5 High level Business/User Requirements

The main user requirements are summarised here at high level. Some solutions have already been defined in the roadmap and feasibility stages due to constraints imposed by the already existing systems and the need to minimise service interruptions, thus these are no longer solution independent.

ID	High Level Business/User Requirements	Deliverable(s)
01	Compliant Life Safety Emergency Power Systems (SV1)	Modify and upgrade SV1 Emergency Power systems to obtain Statutory Acceptance by the Accredited Body TÜV Rheinland.
02	Selective Protection to Power Systems to limit the impact of electrical faults to local areas only.	Modify and upgrade the Power Distribution and network protection systems.
03		
04	Heating resilience to cope with district heating failures	Upgrade to [REDACTED] primary network. Connections for temporary boiler installed to give 48h response time.

2.6 Deliverables

The objective of the execution phase is to provide systems meeting the requirement of the building permit and resilience as per the requirement specified by [REDACTED]

Systems will be modified and/ or replaced to minimise the identified points of failure.

(Text regarding completed works shown grey)

The objective of the planning phase is to:

Document design solutions which will achieve approval by the relevant accredited bodies and ultimately the building authorities.

- The planning is to further detail the project work plan and time schedule to consider the interdependencies of implementing modifications and upgrades to existing live systems
- The design is to be suitably detailed to allow a cost calculation per work packages and elements as per DIN276.
- This will provide the basis for the next project phase "Execution" including execution design, the procurement of contractors, the execution and commissioning and finally acceptance by the accredited bodies.
- Included in this phase will be minor works regarding defect remediation e.g. fire separation and upgrades to documentation which can be rectified without the need for the overall detailed design analysis.

ID	Key Deliverable Name	Deliverable Description
MS04	Planning – Rectification of minor TÜV Recommendations	Confirmation of rectification by independent engineers.
MS05	Planning - Detailed Design	Approved detailed design as basis for approvals planning, construction drawings and tender specifications.
MS05	Planning - Building Approval, Tender Specifications and Construction Planning	Approval by the local authorities to allow construction to start. Specifications to allow negotiation in work packages. Construction planning as the basis for the contractors to prepare their shop drawings for execution.
MS06	Planning - Contract Award	Award to contractors to begin construction
MS06.1	Execution – Agreement accredited Body	Agree details of revised strategy with the accredited body.
MS07	Execution – Practical Completion	Practical completion - systems accepted by the authorities and handed over to operations.
MS08	Project Closure	Completion of final invoicing – Project Closure report

2.7 Constraints

The main constraint is the need to keep the MB operational. On a Greenfield site, modification and testing of the central electrical systems could be carried out with less overall time and effort but would require repeated power shut downs for several months. This is assumed not acceptable at the MB site. B2 – planned partial shut-downs of up to 10 working days will be integrated into the project execution.

ID	Issue /Impacted Business Area	Constraint
	Planned power outages - All	Works will be planned to minimise power outages during normal working hours. In exceptional circumstances more than 48h power outage may be required. B2 – As above agreed partial shutdowns for up to 10 days.
	Unplanned Power outages - [REDACTED]	Although every effort will be made to plan modifications and their implementation to avoid unplanned power outage this can never be fully ruled out. Overall timelines have been communicated to [REDACTED] and will be reviewed in detail at each planning stage and again before implementation.
	Single suppliers	[REDACTED] system; [REDACTED] Operators Responsibility for technical FM – for works requiring these existing suppliers, exceptions to the procurement rules will be required. [REDACTED]

ID	Issue /Impacted Business Area	Constraint
	Security	Design to be by Framework [REDACTED] Construction site access to be carried out via separate newly created breach in perimeter fence as no site access will be permitted via the current entrances [REDACTED] Temporary fence to be constructed between the site-works and the existing MB site.
	Timetable Approvals City	Required for new construction – plan 6 – 9 months
	Timetable Procurement works packages	3/5 Quote tenders – plan 9 months – work packages agreed [REDACTED] as part of the 2021 procurement plan. B2 – Procurement plan to be updated to reflect changed Work Packages and partial combination design and construction.
	Construction Market	Currently overheated – designers and contractors, even if they have expertise, would prefer less complex projects and new build as opposed to working on live systems.
	[REDACTED]	Impact on [REDACTED] during construction to be considered. B2 agreed in principle to locate 1 additional containerised generator during reconstruction only.
	Human resources	Dependent on approval as assumed below Will be reviewed as other projects become live to assess if backfilling with external staff is necessary. B2 – team strengthened in view of lessons learned during the previous design phases.
	Impact Covid 19	Some site surveys moved to 2021 to minimise staff on-site. Design meetings held remotely via Webex/ Teams , now functioning well despite steep learning curve. B2 – lessons learned to date in new working practices will be maintained as long as possible before start on site.

2.8 Assumptions

The assumptions below will be verified in the upcoming planning phase. [REDACTED]

ID	Issue	Assumption
	Scope	No allowances made for future [REDACTED] [REDACTED] These will have to be integrated separately if and when required.
	Timescale	Based on expected scope and durations for procurement and approval. Timescale for setting to work to be reviewed as design develops. It is assumed that urgency of remediation has priority over future [REDACTED]

ID	Issue	Assumption
	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
	Contingency	<p>To be held by the PSC/ PSG so as not to block funds in the ECB ongoing budget. The €3 Million contingency included in the consultant's feasibility studies has therefore not been included in the PAD Table for the project charter.</p> <p>Cost accuracy of +/- 30% at the start of planning, now assumed to be +/-20% at completion of design phase LP3 for option C5. This 20% not included in the figures.</p> <p>B2 – for F+S packages these are based on an initial feasibility study only – cost accuracy -10+ 30% - no contingency included in the figures</p>
	Shift work	<p>Assume that works within existing building to be limited to out-of-hours working, and that a minimum shut-downs within office hours are to be planned. B2 – shift work minimised due to allowing pre-agreed shutdowns during office hours.</p>
	Statutory System Testing	<p>The original accredited body stipulated that when modifying any part of the system that the entire system would have to be retested. The current accredited bodies (experts) consider this unreasonable as this would require evacuation of the entire MB site for extended periods and agree that only modified systems need to be retested.</p>
	Accredited Body (TÜV)	<p>The local codes (TPrüfVo) require that the body identifying defects, must also attest that these have been remedied. This may only be possible after the timeframe of the current TÜV framework contract which will have to be extended to cover these works.</p>
	Human Resources	<p>Due to the extent and complexity of the modifications to live systems, [REDACTED] have in November 2020 appointed 1 additional FTE (Electrical Engineer) for 3 years to complete the works. B2 – team strengthened by 1 Controls Engineer @ 0.4FTE, 1 Electrical Specialist @ 0.6 FTE. Procurement to be supported by [REDACTED]</p>
	Risk	<p>Due to the risks inherent in modifying critical systems under live operation, an external risk manager will be appointed to evaluate all measures before and during implementation. B2 will be</p>

ID	Issue	Assumption
		incorporated into the scope for the main design and build electrical contractor. Scope reduced by acceptance of agreed power shutdowns. BCR#03 – role will be via a separate site management company, if possible contracted via the building operator to maintain operational responsibility.

2.9 Risks

The most significant risks from the project risk register are summarised in the table below.

The existing broad sense risk- power outage with significant time to repair is covered under the ARU (risk 00236) The MB ERI project completion by End 2023 is the approved mitigation for this risk. (To be updated in ARU 2021)

Regarding narrow sense risks, in addition to the risks incurred on any construction project such as contractor insolvency, missing interface coordination etc. the main risks are technical where working on live systems and the potential impact on the building operation, and financial/ legal when balancing the need to rectify the defects in a timely manner, [REDACTED]

The security risk regarding works on or adjacent to the MB site has been discussed with [REDACTED] and mitigation measures have been considered in the project plan.

Risk ref./ Risk zone ¹	Risk description (in business language)	Response plan
[REDACTED]	[REDACTED]	<p>The next mitigation stages are:</p> <ol style="list-style-type: none"> 1. Power Resilience Strategy for agreement with TÜV and local authorities by end-August 2018. (– complete) 2. Feasibility study for the necessary mitigation measures to be fully understood by end-June 2019. (under review) 3. Modifications, construction and testing – potentially until end-2022
[REDACTED]	[REDACTED]	<p>The ERI project will focus specifically on the resilience of the power systems. Systems will be simplified so as to be more resilient. Before implementation new systems will be tested in parallel to the live systems. Following completion, the systems will be configured to allow more detailed live building performance tests by switching off part of the site, not all of the site.</p>
...		

¹ The cell background colour indicates the risk zone (green, yellow, red) of the reported risk

Risk ref./ Risk zone ¹	Risk description (in business language)	Response plan
N-ERI_09	Interruption of power supply and associated critical infrastructure during modification works	Where necessary, new systems will be constructed in parallel to the current live systems. The new systems will be completed and tested before switchover.
N-ERI_09	Interruption of power supply and associated critical infrastructure during modification works	Contractors will produce method statements for review with [REDACTED] and [REDACTED]. Critical works will be carried out at times to minimise impact in the event of an incident.
N-ERI_09	Interruption of power supply and associated critical infrastructure during modification works	An independent risk manager will be appointed to review and monitor the risk mitigation processes.
N-ERI_09	Interruption of power supply and associated critical infrastructure during modification works	To prepare for critical switchovers the FM Operators team will be strengthened to train additional electrical staff with the qualifications and site knowledge to enable manual switchgear operation.
N-ERI_10	Security Risks during construction phase due to works at site perimeter	In agreement with [REDACTED] the construction site will be separated from the operational [REDACTED]. Site be a perimeter fence including camera surveillance. Access to the site will be via a temporary road. The site will have continuous security monitoring.
N-ERI_02	Dependence on Single Suppliers - e.g. Power Management System - [REDACTED]	[REDACTED]
N-ERI_03	Power Management System - [REDACTED]	The modification strategy will have to be designed to take the available resources into account, breaking the works into packages to ensure implementation in a structured manner. Replacement of the system by a system with more open software and market presence will be evaluated in the design phase.
N-ERI_06	[REDACTED]	[REDACTED]
N-ERI_17	Electrical network protection and selectivity design - not clearly defined in standard design contract duties.	These duties will be specified in detail and awarded in addition to the standard design duties. An independent body will be appointed to verify the calculations and their implementation.

B = Broad-sense Risk; N = Narrow-sense Risk

Link to risk register:

Updated risk register maintained in PPM:

2.10 Synergies / Dependencies

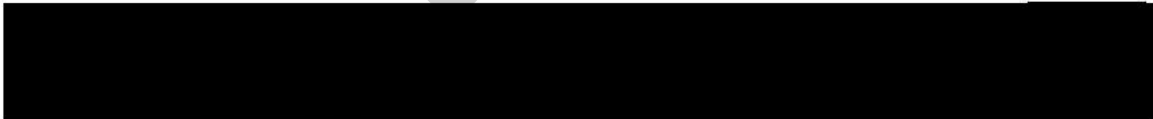
This project has synergies to:

Existing Service/Activity/Project Name	Description of Synergy	Milestone (if applicable)
NEP - New ECB Premises – Formal Acceptance	[REDACTED]	June 2021 December 2019
[REDACTED]	[REDACTED]	June 2020
MB Site – Future Buildings (Growth Modules)	The MB ERI design will consider how to minimise impact on the areas designated in the NEP building approval for future buildings on the MB site. No capacity for these buildings will be considered in this project so as to minimise complexity and disruption due to complex interfaces in the future. B2 – additional physical building scope minimised so negligible impact.	
MBEL – Emergency Lighting	Due to the time needed to complete the MB ERI works – the emergency lighting will be upgraded as a separate project to provide more rapid risk mitigation in this area. B2- reintegration of interim system included to minimise ongoing maintenance costs,.	September 2020 Completed now functional

This project depends on:

Existing Service/Activity/Project Name	Description of Dependency	Milestone (if applicable)
NEP New ECB Premises – Formal Acceptance	e.g. some of the final as-built documentation is still outstanding – if not available on time then substitution will be required. B2 – Ongoing operations have identified some defects in the as-built documentation. These will be verified by site surveys to minimise risk during reconstruction.	
Ongoing Framework Contracts	As part of the planning phase the existing framework contracts will be reviewed to see where the proposed works can be covered. In accordance with the multi-annual procurement plan existing framework agreements with relevant construction companies will be re-tendered in time to avoid contractual gaps after expiry of existing contracts.	July 2021

2.11 Impact on existing business and/or portfolio strategies

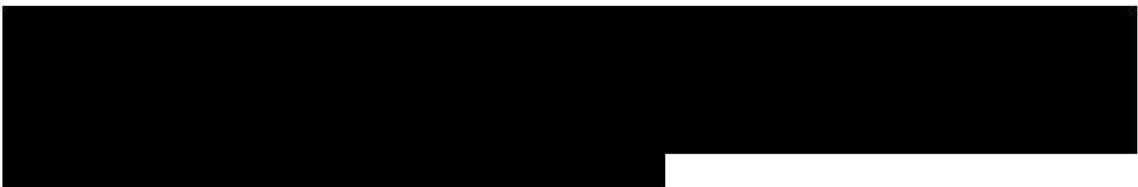
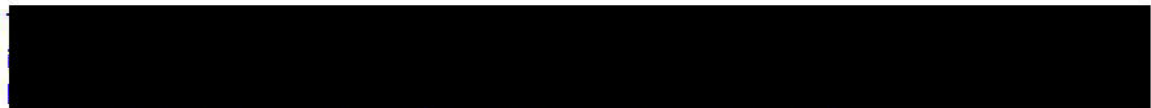


Due to the failures identified during the building performance tests, the strategy of automatic switchover from the MB main power feeder to the MB back-up feeder has been changed. The switchover will now take place manually which may take longer but will allow checks to ensure that this does not leave the site without power from both feeders.

Following implementation of the MB ERI project, the automatic switchover will be restored. B2 – the implementation of a simpler control system will minimise domino effects identified during operational tests resulting in unwanted automatic switching.

2.12 Impact on IT Architecture landscape

No change to IT systems.



3 COST, TIMING AND RESOURCES

3.1 Cost

The project initiation phase was covered by a PID [REDACTED]

The budget for the feasibility studies of €0.48 Million will be consumed – the works are complete; invoicing will take place over the coming months.

For phase 1 (planning) € 1.88 has been paid. [REDACTED]

€1.8 Million is foreseen for consultancy, i.e. architects, engineers and certified experts during the design phase. €0.6 Million is foreseen for preliminary construction works- i.e. those items which can be implemented to rectify TÜV defects without the need for detailed design works beforehand.

B2 – The budget consumed in the planning phase which ended in May 2021 is €1,882,044.93. The final invoice was settled in December 2021.

For the execution phase the total remaining estimate of € 12.1 8,1 Million includes €10.3 6.5 Million for construction works (building maintenance) (assets under construction) and €1.8 1.6 Million for Other Consultancy (Engineering design, risk management and Site Supervision)

Account	2021	2022	2023	Total
Sum	€ 113,703.01	€ 7,901,902.77	€ 4,098,096.91	€ 12,113,702.69
Consultancy (Other)	€ 18,107.25	€ 1,243,971.98	€ 559,050.06	€ 1,821,129.29
Consultancy (Other)	€ 577,000.00	€ 835,000.00	€ 161,000.00	
Building Maintenance	€ 95,595.76	€ 6,657,930.79	€ 3,539,046.85	€ 10,292,573.40
Building (AuC)	€ 339,000.00	€ 5,386,000.00	€ 739,000.00	

B2 – PAD Table has been replaced by the PPM software. [REDACTED]

Note :

All design and engineering works are shown as consultancy.

Construction works are shown in the « building maintenance » account.

BCR#03 02

The costs will be updated in ppm following approval of the BCR.

The PAD table has been superseded by PPM – see summary on next page.

Cost Breakdown per work Package and Project Phase

In this project charter, approval is requested for the extension of the [construction](#) phase.

As above

ECB-P-PUBLIC

3.2 Timing and Milestones

Milestones 1 – 4 during the initiation Phase are shown here for completeness.

Phase I - Planning

The upcoming planning phase will cover Milestones 4, 5 and some minor parts of Milestone 6 + 7, i.e. during the planning phase some construction works for defects remediation will be carried out in parallel where issues can be remedied without further detailed planning. Tender specifications will be produced for long-lead items so that procurement can start immediately following approval for the execution phase.

Phase II - Execution

Following the detailed planning phase, PSC approval will be sought for the execution phase based on the detailed design concepts.

Execution (construction) works for buildings and long lead items will start immediately and run parallel to the construction design and procurement for the electrical and control systems. All construction testing and certification is to be completed by 2023.

6 months have been allowed for project closure and the settling of final invoices with the contractors. This will start in parallel to commissioning the systems.

ID	Milestone Description	Target Delivery Date
MS01	Initiation – PID approval - completed	June 2018
MS02	Initiation – Strategy Road Map - Completed	August 2018
MS03	Initiation – Feasibility Study - Completed	April 2019
MS04	Planning Rectification of minor TÜV Recommendations	June 2020
MS05	Planning – Basic Engineering C5	July 2021 June 2020
MS06	Execution – Engineering B2, Approvals Planning, Tender Specifications Contract Award	April 2022
MS07	Execution – Contract Award	December 2021
MS08.1	Execution – start switchovers	September April 2022
MS08.2	Execution – Construction Complete – ready for Commissioning	June March 2023
MS08.3	Commissioning and Practical Completion	September 2023
MS09	Project Closure	December 2023

PPM Summary – gannt Chart

Line number	Line identifier		Level	Name	Descript	Planned start	Planned finish
1	1	📅	1	MB Energy Resilience Improvement - MBERI	MB E...	01/01/2018	29/12/2023
2		⏴				17/08/2020	29/01/2021
3	2	📅	2	Project setup / Initiating	Proje...	01/01/2018	12/07/2019
4	3	📅	3	LP1 Feasibility / User Requirements		01/01/2018	30/09/2018
5	6	📅	3	LP2 Basis Design + Feasibility		01/09/2018	12/07/2019
6	9	⏴	2	Ready for planning	Read...	13/07/2019	12/07/2019
7	10	📅	2	Planning	Proje...	01/01/2018	30/07/2021
8	11	📅	3	LP3 Planning Resource Tracking	Reso...	01/08/2019	04/07/2021
9	16	📅	3	Financial Resources Summary	Task ...	02/03/2020	30/09/2020
10	20	📅	3	LP3 Detailed Design (Entwurfsplanung)	LP3 D...	01/08/2019	30/11/2020
11	35	📅	3	LP4 Approval Planning (Genehmigungs...	LP4 A...	01/01/2018	03/07/2020
12	44	📅	3	Planning II	Proje...	29/06/2020	30/07/2021
13	51	📅	2	Project Executing	Proje...	02/08/2021	29/09/2023
14	52	📅	3	LP5 Construction Planning	LP5 C...	02/08/2021	30/12/2021
15	54	📅	3	LP6 / 7 Tender Phase / Negotiation Pha...	LP6 / ...	01/09/2021	30/09/2022
16	56	📅	3	LP8 Construction on Site	LP8 C...	03/01/2022	29/09/2023
17	59	⏴	2	Ready for closing	Read...	02/10/2023	01/10/2023
18	60	📅	2	Project Closing	Proje...	02/10/2023	29/12/2023
19	61	📅	3	Artefacts	Artef...	02/10/2023	29/12/2023
20	64	⏴	2	Project end	Proje...	30/12/2023	29/12/2023

3.3 Planned Resources

The internal project team will concentrate on:

- Project monitoring and reporting.
- Verification of design concepts and their implementation together with the operational facility management teams.
- User communication and assessment of requirements during the construction, commissioning and testing phases.

The expected FTE (Person-days) per project phase are detailed in the PPM Project Gantt Chart

2020	Day 2021	2022	2023	Sum	Total (Day)
0.13	463.16	1,078.27	793.65	2,335.21	2,335.21
0.13	463.16	1,078.27	793.65	2,335.21	2,335.21
0.13	463.16	1,078.27	793.65	2,335.21	2,335.21

All other works regarding design, construction and verification will be outsourced in order to provide adequate resources and expertise.

Risk management will be outsourced due to resource constraints within [REDACTED]

A full analysis of the resource requirements, including potential team member training will be produced in the planning phase and documented in the PM2 Resource Plan Document

ID	Resource Requirement	Description	Known Constraints
	Project management	Project management and support team	Considered in [REDACTED] Portfolio
	Construction Services	[REDACTED] with external support	Framework contracts
	Electrical Engineer	Will be added to the [REDACTED] for the duration of the project to provide enhanced quality control	Considered on [REDACTED] resource planning for up to 5 years.
	[REDACTED] infrastructure	[REDACTED] (technical experts)	Considered in [REDACTED] Portfolio
	Communication Services, procurement, [REDACTED] services	[REDACTED]	FTE to be agreed with the business units
	External planner, experts and construction companies	Contracted either via Frameworks or one-off procedures for all planning and construction works.	Where some specific works are not included in framework contracts the procurement route will be agreed with [REDACTED]

ID	Resource Requirement	Description	Known Constraints
	Accredited Bodies	Required to formally approve the systems and confirm this to the city authorities.	The TPrüfVO limits the criteria weighting for procurement of accredited bodies.
	Risk management	<p>██████████ will be continually involved in the reporting.</p> <p>A Project Risk manager (external) will be appointed to plan and monitor the implementation of the measures together with the external design and supervision team. BCR#03 – additional site management to be appointed.</p>	Internal resources available within ██████████ cover normal operation only.

ECB-PUBLIC

4 APPROACH

4.1 Sourcing Strategy

ECB staff will prioritise operational needs and involve the relevant internal stakeholders to minimise shut-downs during the implementation phase.

As described under Planned Resources the strategy is to outsource works regarding system design, construction and verification in order to provide adequate resources and expertise.

Existing framework contractors will be utilised where possible, in order to benefit from their knowledge of the existing systems and processes.

4.2 Procurement Strategy

The following set of strategies are planned to be applied by [REDACTED]

- Outsourcing of activities to the maximum possible extent to both obtain the necessary technical expertise and capacity, and to relieve internal resources and keep the ECB's involvement to a minimum, thereby minimising increase of headcount.
- Quality and continuity will be provided by commissioning architects, engineers and consultants where possible who are experienced with the MB building structure and the ECB requirements.
- The main electrical package will be via an experienced design and build contractor for electrical works. It is recommended to carry out a direct award in order to minimise time and costs by integrating the design and implementation works and avoiding surcharges when appointing via a 3rd party.
- Building Design Works will be by the Framework Contractor [REDACTED] (Architects and Planners.)
- Operational Support for the technical systems will be via [REDACTED]
- Specialist Planners and the accredited body for the design and construction works will be procured via competitive tendering.
- Where possible, construction works will be commissioned based on existing framework contracts.
- Works packages not covered by framework contracts will be procured where possible by competitive tendering.
- Where a change of supplier is not technically possible e.g. building automation systems or power automation systems – amendments will be negotiated directly with the existing suppliers.

The work packages have been included in the 2021 Procurement plan [REDACTED]. [BCR#03 – currently being updated in the 2022 review.](#)

4.3 Project strategy and development approach

Due to the scope and complexity of the works, a mix of strategies will be required and is considered in the project schedule.

Project strategy		Explanatory statement
Project solution development	<input type="checkbox"/> Develop in-house <input checked="" type="checkbox"/> Buy <input type="checkbox"/> Buy some components <input type="checkbox"/> Other (please specify)	<i>Examples – electrical works, generator, building works.</i>
Cooperation approach <i>[several can be crossed]</i>	<input checked="" type="checkbox"/> ECB standalone <input type="checkbox"/> Cooperation with NCB(s) <input type="checkbox"/> Cooperation with EU bodies <input type="checkbox"/> Other (please specify)	<i>Works limited to ECB MB site.</i>
Outsourcing strategy	<input type="checkbox"/> All deliverables will be produced in-house <input checked="" type="checkbox"/> Some deliverables will be outsourced	<i>Most deliverables will be outsourced.</i>
Project development approach		Explanatory statement
Development strategy	<input type="checkbox"/> Waterfall <input checked="" type="checkbox"/> Iterative <input type="checkbox"/> Other (please specify)	<i>The project will follow classic design and construction stages to enable checking and verification of the design and functional requirements before implementation to ensure code compliance. Strategy changed due to lessons learned to date and experience gained during the quick wins exercise – will now focus on a design and build package for the most critical systems.</i>
Solution validation approach <i>[several can be crossed]</i>	<input checked="" type="checkbox"/> Proof of Concept <input checked="" type="checkbox"/> Prototype <input checked="" type="checkbox"/> Pilot	<i>Due to the need to completely test the life safety interactions, the control system will be completely constructed and tested in a control environment before implementation at the MB Site.</i>
Rollout strategy	<input type="checkbox"/> Big bang <input checked="" type="checkbox"/> Gradual <input type="checkbox"/> Other (please specify)	<i>The new systems will be constructed parallel to the existing systems and then switched live to cover specific building areas during power downs at weekends over several months.</i>
Data migration strategy	<input type="checkbox"/> Big bang <input type="checkbox"/> Staggered <input type="checkbox"/> Older data is only archived <input type="checkbox"/> The system will only collect new data	N/A

4.4 Service Approach

Following implementation, the works will be covered by an amendment to the existing FM Operations contract.

With the implementation of automatic switching, the operational readiness measures currently in place can be reduced.

4.5 Change Management

4.5.1 Project Change

The exact scope of the project will be defined during the upcoming planning phase. An updated project charter will be submitted for approval before the execution phase. Should scope changes thereafter be required, these will be agreed with the PSG [REDACTED] before submission to the PSC as a Boundary Change request. (BCR)

4.5.2 Organisational Change

No significant changes required.

The completion of the project will allow the recurring maintenance and building performance testing of the electrical systems which are currently partly suspended due to warranty claims against the original contractors or the risk of power failures.

4.6 Lessons learnt from previous projects

See above – from the MB ERI planning phase to date, it has been decided to minimise scope and complexity where possible and concentrate design and construction with one party for the key functional systems. The main lesson from the NEP project is the need for continuity during the design, construction and testing phases. (The NEP electrical designers became insolvent at the start of the execution phase)

To mitigate this, all relevant duties will be specified and agreed with the power consultancy contractor to ensure that these have been considered in their fee calculations. Especially regarding the power management systems, the designer will have extended duties to ensure that these are programmed and tested in detail.

The potential for success is increased due to the much reduced and more focused project scope when compared to the extent of the NEP electrical systems and time pressures involved.

A relevant element is the adherence to an orderly quality management using error avoidance tools. For this purpose, a rules comparison is carried out for the draft design planning phase (HOAI LP 3-5). This rule comparison is prepared in a written tabular form. On the one hand, the building regulations (especially “Brandschutzkonzept” in the building permit) and normative requirements in terms of function, construction and fire protection are listed. On the other hand, the conformity and functional safety/effectiveness are described. In case of deviations, the effectiveness of an equivalent functional safety is explained and documented.

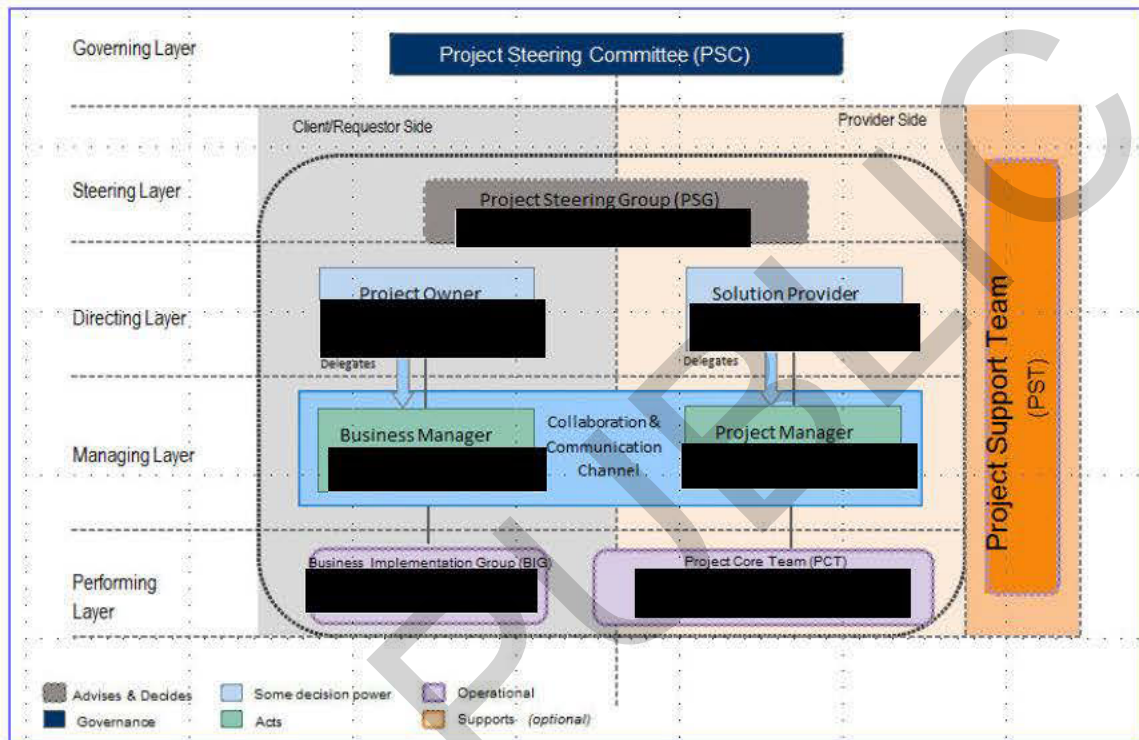
The design will be checked at all stages by accredited bodies- focussing on the high-voltage and power management systems.

These bodies will also check before switching live and during handover.

5 GOVERNANCE AND STAKEHOLDERS

5.1 Structure

The roles are defined in the PM² canvas included in the annexes.



5.2 Roles and Responsibilities

The PSG will be [REDACTED] as chair.

<i>Role as stated in PM²</i>	<i>Name</i>
<i>PSG (steering layer)</i>	[REDACTED]
<i>Project Owner</i>	[REDACTED]
<i>Business Manager</i>	[REDACTED]
<i>Solution Provider</i>	[REDACTED]
<i>Project Manager</i>	[REDACTED]
<i>PSG Members</i>	[REDACTED] [REDACTED] [REDACTED]
<i>Project Core Team (PCT)</i>	[REDACTED] [REDACTED]
<i>Project Core Team (PCT)</i>	[REDACTED]
<i>Project Support Team (PST)</i>	[REDACTED] [REDACTED]
<i>Business Implementation Group</i>	[REDACTED] [REDACTED] [REDACTED] [REDACTED]

5.3 Other Stakeholders

In the table external stakeholders are listed first, then the most relevant ECB Business units.

<i>Role, key problems perceived</i>	<i>Name</i>
City Authorities - providing building approval – permit to operate.	City of Frankfurt
Accredited body – (recurring inspections) confirms that the life safety systems are code compliant and safe to operate	TÜV Rheinland / tbc
Fire Safety expert – confirms that the works comply with the fire safety strategy	[REDACTED]
FM Service Provider – has operational responsibility for the building and its systems [REDACTED] Responsible for maintaining and testing all systems.	[REDACTED]
[REDACTED] building operation in compliance with the building permit – operation delegated to the external FM Service Provider – ensure that systems and buildings comply to the building approval.	[REDACTED]
[REDACTED] operational safety and health.	[REDACTED]
[REDACTED] maintaining operational resilience as defined in the building requirements for the NEP – e.g. Define which business units require backup generator or ups power.	[REDACTED]
[REDACTED] responsible for evacuation management in the event of e.g. a fire.	[REDACTED]
[REDACTED] responsible for the resilient operation of the IT Infrastructure and fail-over to the second data centre in the event of an infrastructure failure at the MB.	[REDACTED]
[REDACTED] will be responsible for procuring and monitoring external suppliers and support in accordance with the ECB procurement rules.	[REDACTED]
[REDACTED] interface to NEP Project	[REDACTED] [REDACTED]
[REDACTED] advice on legal interfaces to NEP Project and contract holder for external legal advice [REDACTED]	[REDACTED]
[REDACTED] monitoring	[REDACTED]
[REDACTED] support for PPM, input for monitoring when [REDACTED]	[REDACTED]

APPENDIX 1: REFERENCES AND RELATED DOCUMENTS

The attachments from the initiation phase (PID) are included for convenience.

ID	Reference or Related Document	Source or Link/Location
General		
1	Project Folder MB ERI in DARWIN*	
2		
3	Presentation to PSG – Project Overview	
4	Risk Register	
Ready for Execution – BCR#02		
2	Project Handbook	As above
	Stakeholder matrix	
	Outsourcing Plan	
	Project Work Plan	
	- Work Packages per DIN 276	See above
	- ECB Overall Time Schedule	
	Project Progress report > PPM	
	Quality review Report	
	Change Requests	
	Deliverables Acceptance Plan	
	Transition Plan	
	Business Implementation Plan	

ID	Reference or Related Document	Source or Link/Location
	<i>Project Logs</i>	
	<i>Issue Log (Minutes Strategy Meetings)</i>	[REDACTED]
	<i>Risk Log ECB</i>	
	<i>Decision Log</i>	
	<i>Change Log</i>	
Ready for Planning		
	<i>Requirements Document</i>	
	- [REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]
6	<i>User Requirements – MB Business Units with back-up power</i>	[REDACTED]

ECB-PRG