

Stage 2 : CONCEPT

RIBA summary of Stage 2

“During Stage 2, the initial Concept Design is produced in line with the requirements of the Initial Project Brief.

The project team also develops, in parallel with the Concept Design, a number of Project Strategies. Their importance at this stage will depend on how they are to influence the Concept Design. For example, the Sustainability Strategy is likely to be a fundamental component of the Concept Design, whereas a security strategy may have minimal or no impact and can therefore be developed during a later stage.

It is essential to revisit the brief during this stage and it should be updated and issued as the Final Project Brief as part of the Information Exchange at the end of Stage 2.

In parallel with design activity, a number of other related tasks need to be progressed in response to the emerging design, including a review of the Cost Information, the development of a Construction Strategy, a Maintenance and Operational Strategy and a Health and Safety Strategy and updating of the Project Execution Plan.”

BSRIA summary of proforma 2

Proforma 2 is where the concept design(s) are produced in line with the initial project brief. The level of detail is limited, but does allow for some key decisions regarding choice of site, building orientation and overall form to be made. This involves key strategies such as plant space and location based on indicative loadings, servicing strategy, primary services distribution, construction type, offsite manufacture, and sustainability. Some less important concepts may not be agreed at this stage and instead carried forward to the next project stage.

| PROFORMA 2: CONCEPT (RIBA STAGE 2) | | | | | | | | |
|--|--|--|---|---|---|---|---|----------|
| Ref | Design activity in connection with building services | Allocated to L=Lead, S=Support, R=Review | | | | | | Comments |
| | | A | B | C | D | E | Z | |
| General obligations, external liaison (statutory bodies, utilities) | | | | | | | | |
| 2.1.1 | Consult local authorities about matters of principle in connection with the services design of the works including requirements over and above statutory requirements. | | | | | | | |
| 2.1.2 | Put known utility supplies or site-based utilities onto a model to support the engineering services philosophy for the project (energy generation/supply, water supply, waste removal, communications, fire-fighting). | | | | | | | |
| 2.1.3 | Advise on the requirements for utilities and services diversions, based on desktop study and provided information. | | | | | | | |
| 2.1.4 | Advise on regulatory compliance of concept design. | | | | | | | |
| 2.1.5 | Prepare initial strategy for fire safety (such as compartmentation, location of fire lifts, fire detection and suppression philosophy, consultation with relevant authorities). | | | | | | | |
| 2.1.6 | Establish impact of fire strategy on building services design. | | | | | | | |
| Client liaison (briefing, handover, surveys) | | | | | | | | |
| 2.2.1 | Evaluate physical, environmental, functional and regulatory constraints from clients' brief, for potential schemes. | | | | | | | |
| 2.2.2 | Visit site(s) and/or example project(s) to assess physical restrictions that might influence the design philosophy or the development of the design. | | | | | | | |
| 2.2.3 | Advise the client on the need for arrangements to be made for and define the extent of special investigations or tests (could be intrusive or non-intrusive). | | | | | | | |
| 2.2.4 | Review and report on the condition/status of any existing services installations (usually only required for buildings being refurbished/extended). | | | | | | | |
| 2.2.5 | Review feasibility of renewable technologies. | | | | | | Define extent of review | |
| 2.2.6 | Define performance metrics and design targets for the building. | | | | | | | |
| 2.2.7 | Give initial recommendations to the client in the development of an operating and maintenance strategy. | | | | | | | |
| 2.2.8 | Establish targets for the post-occupancy review. | | | | | | | |
| Team liaison (builders' work, spatial coordination, energy targeting) | | | | | | | | |
| 2.3.1 | Undertake the role of lead project designer. | | | | | | Define scope of role | |
| 2.3.2 | Fulfil role of Principal Designer under CDM Regulations 2015. | | | | | | Continues until Principal Contractor is appointed | |

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| 2.3.3 | Discuss potential mechanical, electrical and public health schemes for the preferred solution selected in RIBA Stage 1, with the rest of the design team. | | | | | | | |
| 2.3.4 | Advise team members (architect, structural engineer) of significant implications (size, weight, access requirements for installation and replacement) of mechanical, electrical, public health systems including central plant. | | | | | | | |
| 2.3.5 | Agree builders' work philosophy (such as the treatment of structural openings) for principal mechanical, electrical and public health systems. | | | | | | | |
| 2.3.6 | Agree dimensional and other numerical tolerances to be applied to building services design and deliverables at different project stages. | | | | | | | E.g. weights, quantities of components |
| 2.3.7 | Carry out or commission surveys relating to energy strategy options. | | | | | | | |
| 2.3.8 | Undertake energy strategy studies for the building fabric and engineering services to support the design – typically generic thermal simulation (and modelling) with simplified boundary conditions to give qualitative feedback. | | | | | | | May include impact on neighbouring buildings |
| 2.3.9 | Undertake generic daylight computer modelling required to support the design and obtain qualitative feedback (state particular requirements for the project). | | | | | | | Define scope |
| 2.3.10 | Review architect's proposals for compliance with Building Regulations in relation to energy performance. | | | | | | | |
| 2.3.11 | Develop and update BIM execution plan during project. | | | | | | | As per PAS 1192-2 |
| 2.3.12 | Develop and update master information delivery plan during project. | | | | | | | As per PAS 1192-2 |
| 2.3.13 | Develop and update building services task information delivery plan during project. | | | | | | | As per PAS 1192-2 |
| 2.3.14 | Federate information models from separate task teams and oversee the clash avoidance process. | | | | | | | As per PAS 1192-2. See also 3.3.15 |
| 2.3.15 | Remove critical clashes from the building services concept design. | | | | | | | See section 2.5 of BG 6 |
| 2.3.16 | Prepare programme/Gantt chart for the design activities and schedule of design deliverables. | | | | | | | |
| 2.3.17 | Prepare risk assessments for the design, covering health and safety during construction, operation and end-of-life, and technical risks. | | | | | | | |
| 2.3.18 | Contribute to risk assessments for the design covering programme, cost and quality. | | | | | | | |
| 2.3.19 | Detailed review of existing health and safety file (for refurbishment projects or additional construction on an existing site). | | | | | | | |

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| 2.3.20 | Team-wide design review to signal end of concept design stage. | | | | | | | See section 3.8 of BG 6 |
| | Selection of plant and specialist designers | | | | | | | |
| 2.4.1 | Identify activities needing early specialist design input by others. | | | | | | | E.g. lightning protection, earthing |
| 2.4.2 | Advise client on assessment and selection of specialist designers. | | | | | | | |
| 2.4.3 | Advise client on selection of Contractor Design Portions and plan for covering these topics until the relevant contractors are appointed. | | | | | | | |
| 2.4.4 | Advise on potential for off-site manufacture of building services plant and distribution equipment, including implications for construction strategy, project milestones and logistics. | | | | | | | Early consideration of room-scale or riser assemblies is particularly important |
| 2.4.5 | Agree initial off-site delivery strategy including programme milestones. | | | | | | | |
| 2.4.6 | Establish areas/zones for central plant in line with mechanical, electrical and public health design philosophies. | | | | | | | |
| 2.4.7 | Consider and define need for provisional sums. | | | | | | | |
| | Mechanical design | | | | | | | |
| 2.5.1 | Determine mechanical systems philosophy. | | | | | | | |
| 2.5.2 | Determine passive design philosophy. | | | | | | | |
| 2.5.3 | Undertake assessment of comfort conditions and overheating risk | | | | | | | |
| 2.5.4 | Design review. | | | | | | | See section 3.8 of BG 6 |
| | Electrical design | | | | | | | |
| 2.6.1 | Determine electrical systems philosophy (degree of system integration, redundancy, life-cycle, cross reference to lighting studies, etc). | | | | | | | |
| 2.6.2 | Design review. | | | | | | | See section 3.8 of BG 6 |
| | Public health design | | | | | | | |
| 2.7.1 | Determine water supply and waste-handling philosophy (recycling, storage). | | | | | | | |
| 2.7.2 | Design review. | | | | | | | See section 3.8 of BG 6 |
| | Commissioning | | | | | | | |
| 2.8.1 | Establish phased handovers, system configuration or plant arrangements to simplify commissioning. | | | | | | | |

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| 2.8.2 | Prepare strategic commissioning plan. | | | | | | | |
| | Deliverables – including drawings, specifications, reports | | | | | | | |
| 2.9.1 | Provide report on building services issues as part of concept design report. Specific considerations for this report include the items below. See BSRIA BG 71/2017 <i>Building Services Reports</i> for further details. | | | | | | | Usually as a desk study on matters affecting design options |
| 2.9.1a | recommendations for renewables, | | | | | | | |
| 2.9.1b | considerations for offsite manufacture, | | | | | | | |
| 2.9.1c | environmental assessments, | | | | | | | |
| 2.9.1d | building control requirements, | | | | | | | |
| 2.9.1e | Building Regulations compliance (e.g. Part L, Section 6, etc), | | | | | | | |
| 2.9.1f | Initial energy strategy, | | | | | | | |
| 2.9.1g | noise and acoustic measures, | | | | | | | |
| 2.9.1h | fire and smoke control measures, | | | | | | | |
| 2.9.1i | future-proofing strategy, | | | | | | | |
| 2.9.1j | limitations or considerations for future design development, | | | | | | | |
| 2.9.1k | adequacy of utilities supplies, | | | | | | | |
| 2.9.1l | constraints arising from the brief or local authority policy, | | | | | | | |
| 2.9.1m | high-level metering strategy, | | | | | | | |
| 2.9.1n | plant replacement strategy, | | | | | | | |
| 2.9.1o | research on innovative solutions, | | | | | | | |
| 2.9.1p | daylight analysis. | | | | | | | |
| 2.9.2 | Provide concept design information model including appropriate geometric detail and object information. | | | | | | | |
| 2.9.3 | Provide concept sketch drawings for preferred preliminary design(s). | | | | | | | |
| 2.9.4 | Provide concept schematics for preferred preliminary design(s). | | | | | | | |
| 2.9.5 | Provide information for early-stage life-cycle cost and life-cycle assessment studies. | | | | | | | |

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| 2.9.6 | Provide tender documentation for inclusion in a tender package if the procurement method requires it. | | | | | | | See also 3.9.24 and 4.9.9 |
| 2.9.7 | Provide outline cost plan for building services based on floor area / building type / system assumptions. | | | | | | | |
| 2.9.8 | Provide COBie tables for BIM Level 2 Information Exchange 2. | | | | | | | |
| 2.9.9 | Provide preliminary energy statement for planning submission, where required by the planning authority. | | | | | | | |
| 2.9.10 | Provide concept design builders' work information as applicable. | | | | | | | |
| 2.9.11 | Provide report on adequacy of existing building services to incorporate extended or refurbished works. | | | | | | | |
| 2.9.12 | Provide preliminary estimate of regulated in-use energy consumption. | | | | | | | |
| 2.9.13 | Provide report on any proposals or agreed outcomes following participation in any Soft Landings process. | | | | | | | |
| 2.9.14 | Provide health and safety risk assessments for the concept design. | | | | | | | |
| 2.9.15 | Sign off the concept design report. | | | | | | | Usually by the client |
| | Amended and additional activity descriptions | | | | | | | |
| 2.10.1 | <insert text here> | | | | | | | |

Model definition: Concept Design model

A model showing basic building services proposals, connections to incoming services and utilities, locations of plant areas using rectangular blocks, and routes of main pipes, ducts and electrical distribution in such detail as to show the incorporation of the engineering services in the project as a whole and with respect to any treatment zoning across the floor-plate.

Analogous to detail in BSRIA Concept sketch drawings and Concept Design schematics.

Tolerances for concept design models should be agreed between the recipient and the author before concept design starts, with reference to other members of the project team as appropriate. Tolerances may be expressed in terms of absolute values, or percentage variance, in relation to volume, area, length, weight or some other property.

Typical plant area data to include along with geometry at this stage would include:

- Approximate size (length, width, height) of each plant area including estimates of space required for installation and maintenance
- Approximate weights for main central plant areas and primary distribution routes, especially if there are significant structural engineering implications
- Outline/maximum performance based on building type and approximate area rules of thumb

Typical uses for the model at this stage:

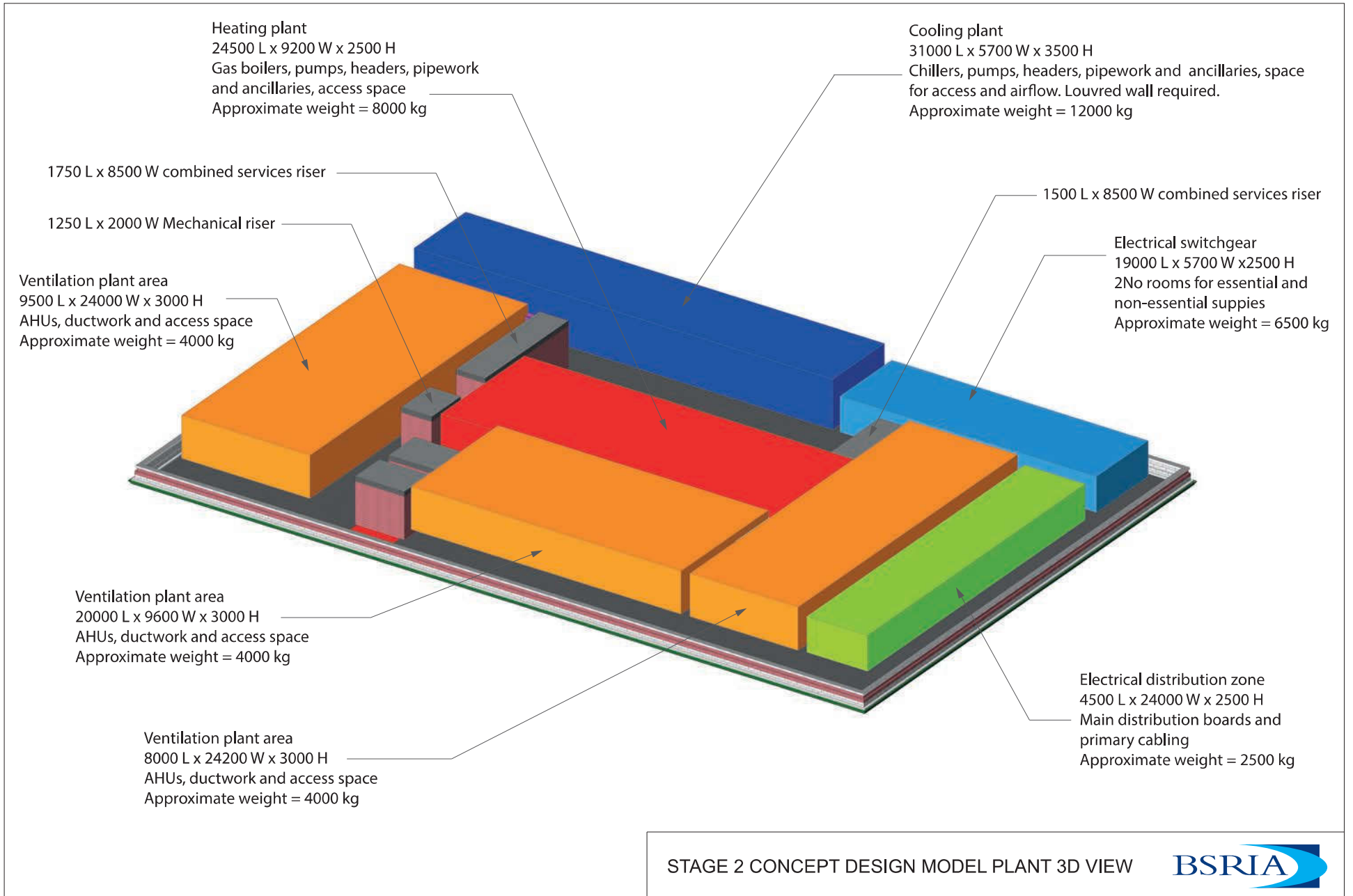
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|------------------|---|
| Analysis | The model may be analysed for performance by applying generic criteria to the generic model elements. |
| Costing | The model may be used to develop cost estimates based on approximate quantities and rules of thumb (cost per element or m ² floor area or m ³ building volume). |
| Programme | The model may be used to show the timescale of installation of major elements and systems but not of detailed components. |

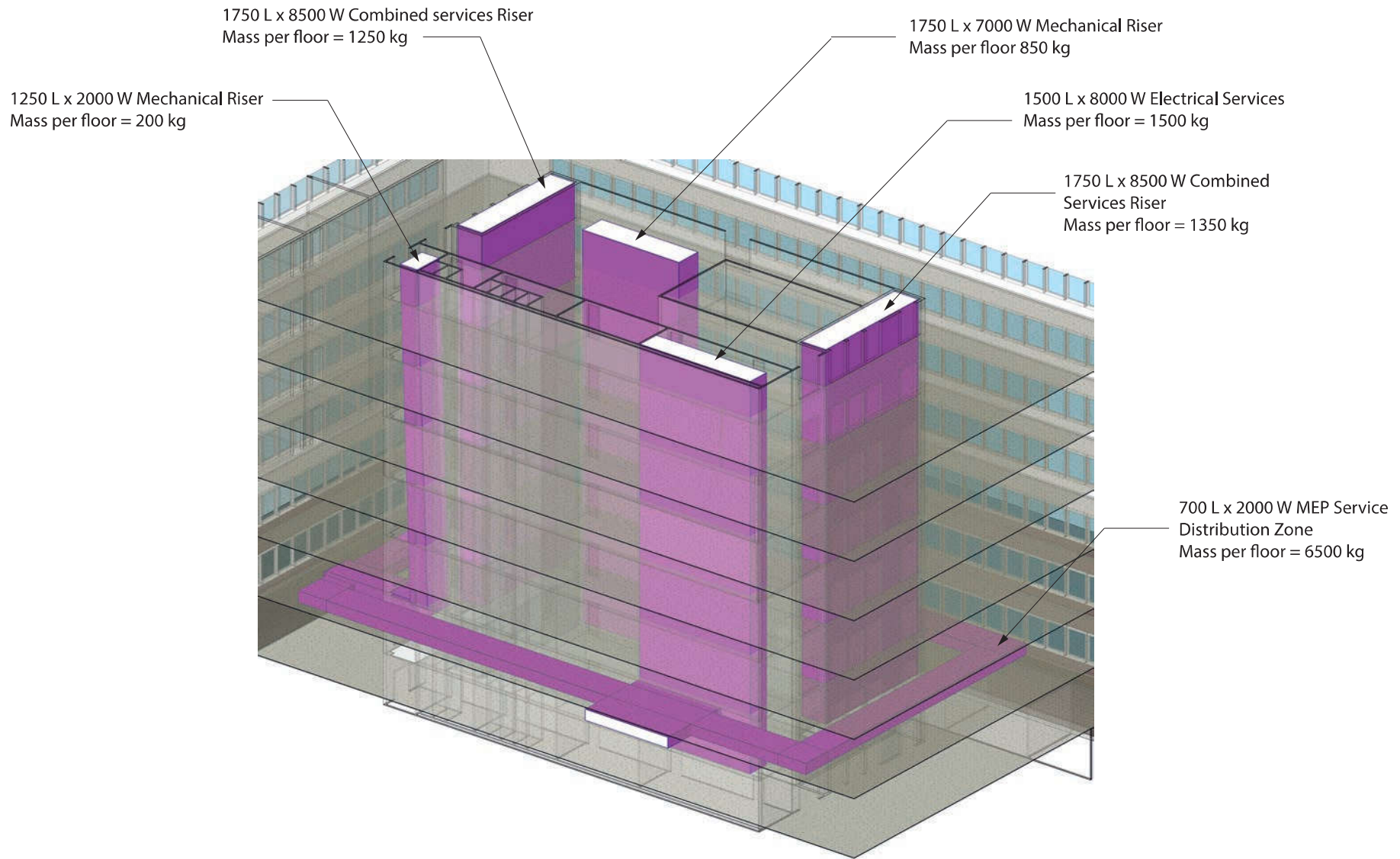
Drawing definition: Concept sketch drawings

Line diagrams, layouts and sections indicating basic proposals, connections to incoming services and utilities, location of areas of central plant, location and extent of main vertical and horizontal distribution routes in such detail as to illustrate the incorporation of the engineering services within the project as a whole and with respect to any zoning.

Drawing definition: Concept schematics

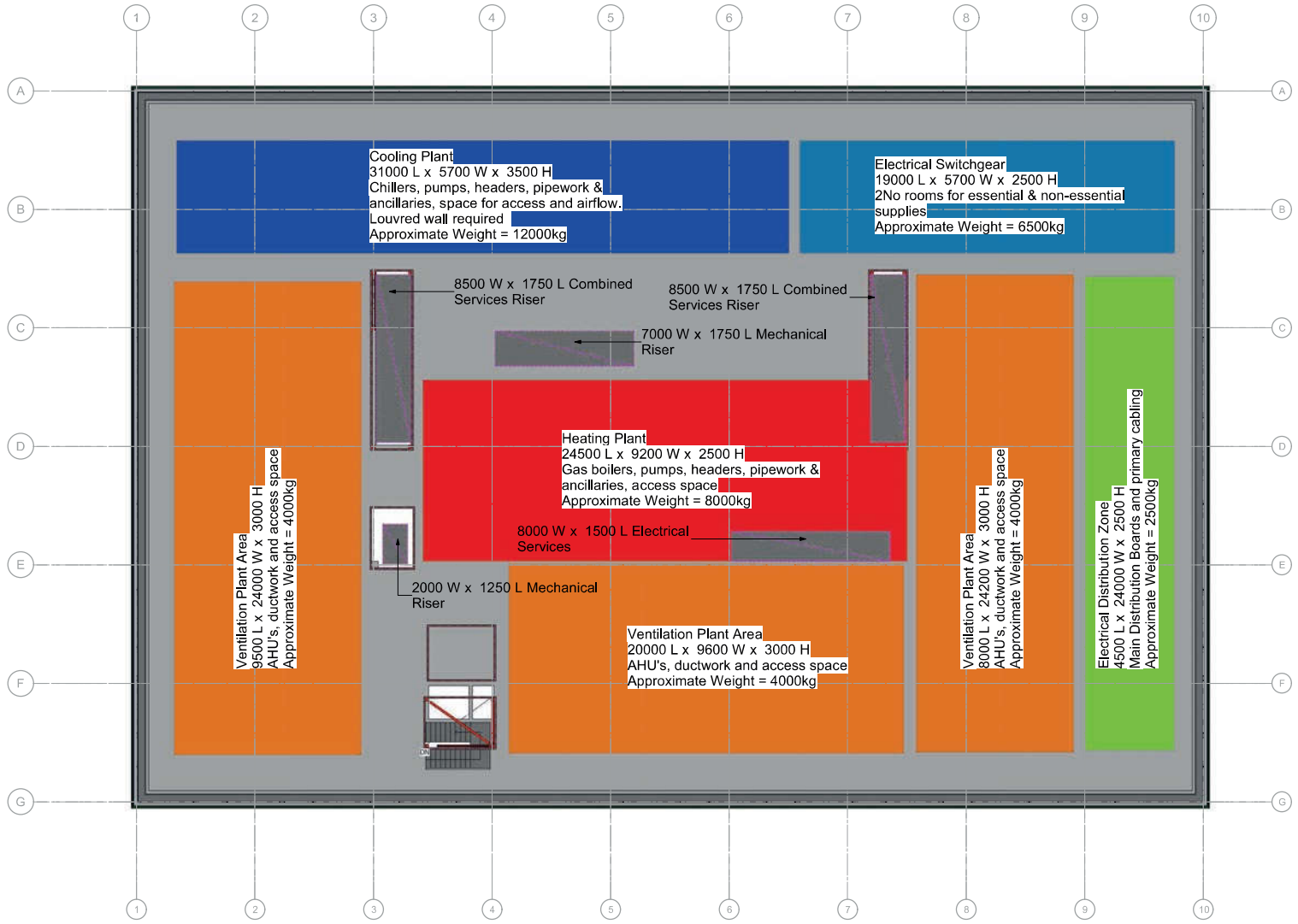
Line diagrams indicating main items of plant and their interrelationships, including with incoming services and utilities, in such detail as to illustrate the incorporation of the engineering services within the project as a whole.





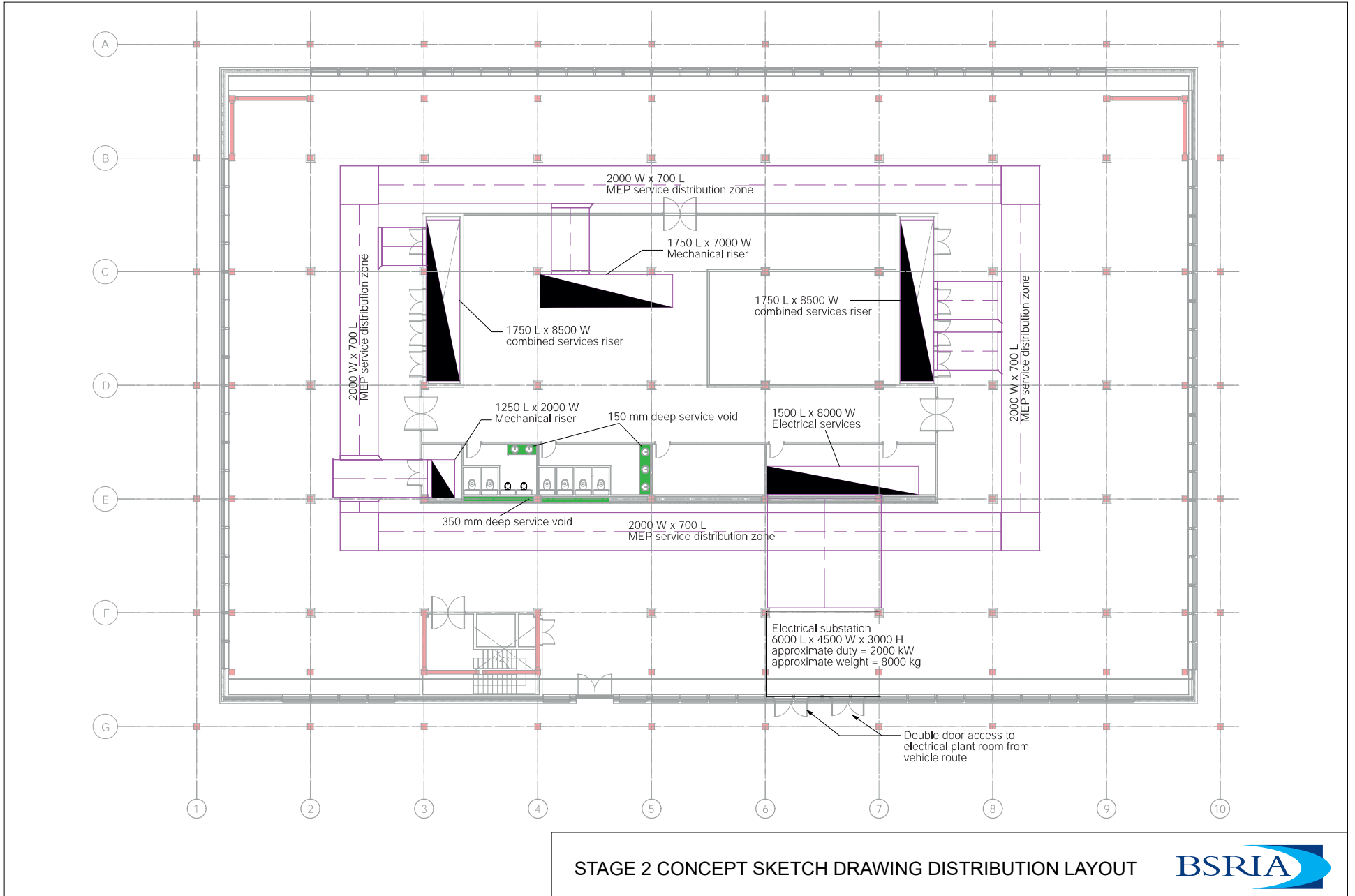
STAGE 2 CONCEPT DESIGN MODEL DISTRIBUTION 3D VIEW





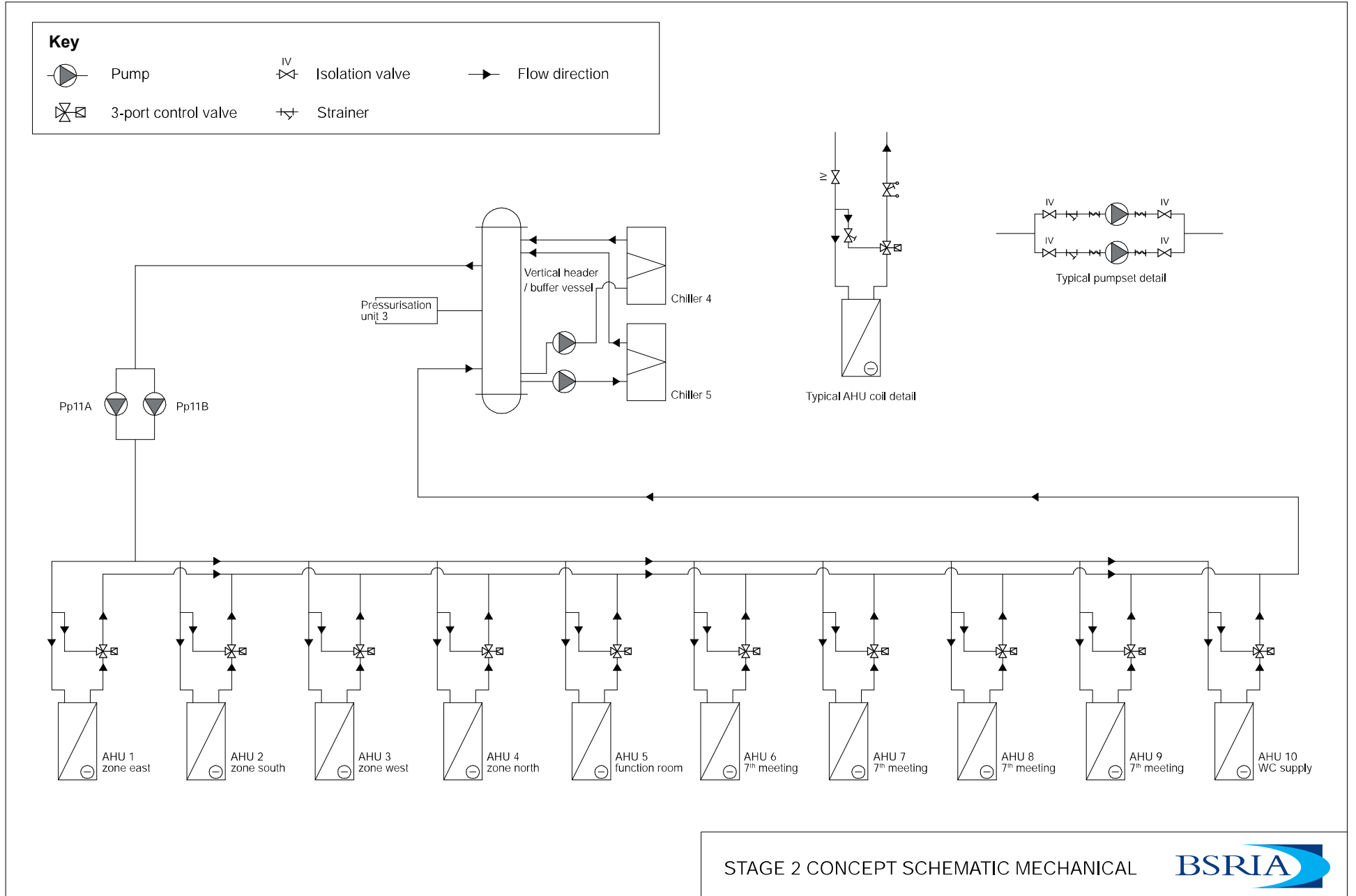
STAGE 2 CONCEPT SKETCH DRAWING PLANT LAYOUT

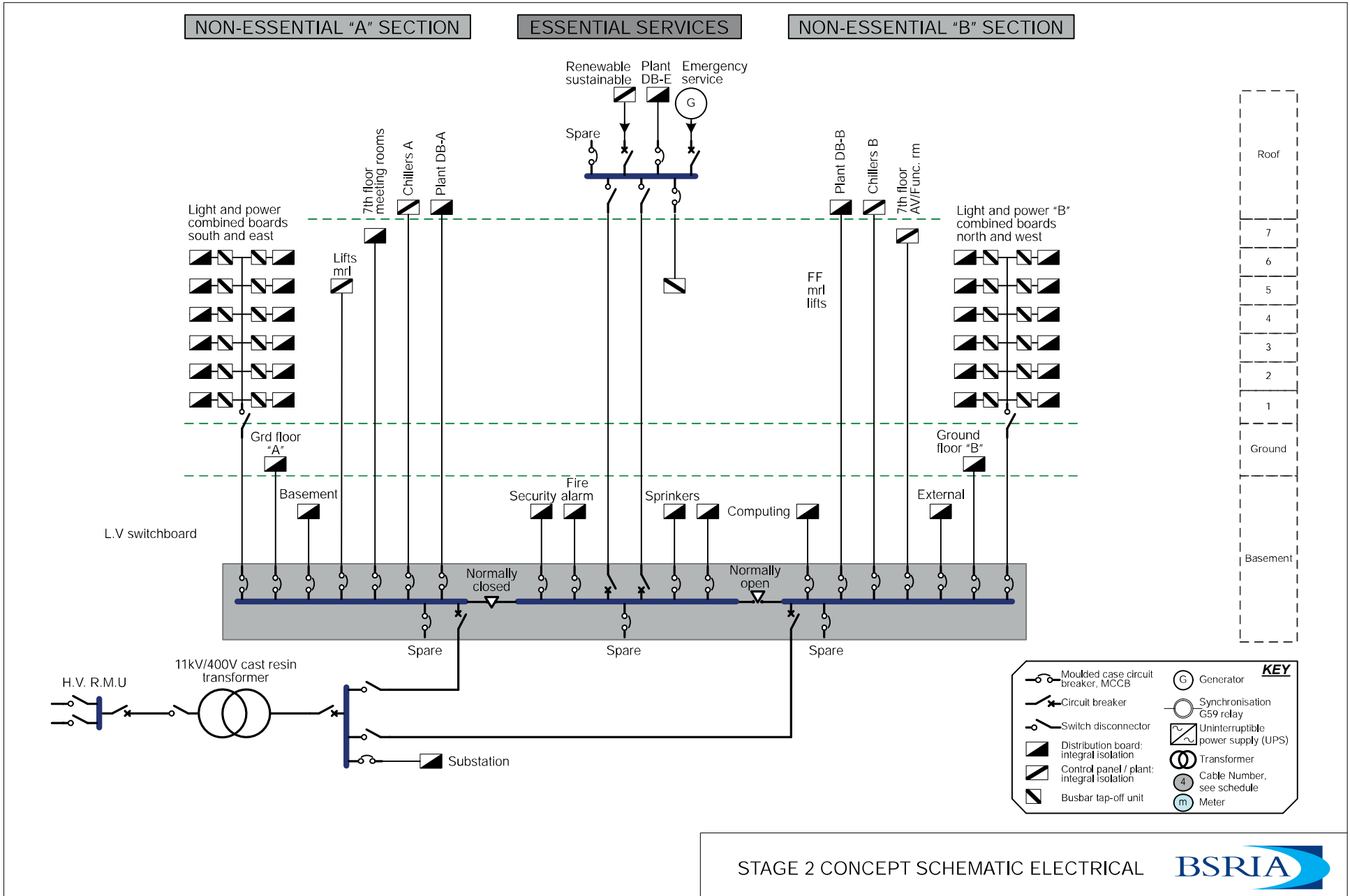




STAGE 2 CONCEPT SKETCH DRAWING DISTRIBUTION LAYOUT







STAGE 2 CONCEPT SCHEMATIC ELECTRICAL



