

## Definition of Lead Engineer (Working Title)

This note is an attempt to define the role of the ‘Lead Engineer’ (LE). It is not a role that currently exists in so far as Working Group 1 of the Competence for Building a Safer Future programme is concerned.

While it is fundamental that any building needs to be safe, there is also a need to ensure that the kit of parts it is assembled from are compatible with one another to the point where the intent to construct a safe building is realised. This is where the LE’s role is proposed to be put into place. It is a suitably competent person or organisation that is responsible for ensuring that all the components of a building are compatible with another and provide a safe and functioning building throughout its prescribed design life.

Considering the above it is proposed that the LE’s role is defined as follows:

*The Lead Engineer is responsible for ensuring all the components of a building project are suitably co-ordinated and compatible with one another in terms of safety, functionality, efficiency and future maintainability.*

The LE is an overseeing role that provides an independent peer review of the building project with respect its functionality in terms of the health and safety of its occupants. They will have to review all design documentation produced for the building project that directly address how it is to be used and maintained. They shall confirm their acceptance that all their observations and comments have been acknowledged and addressed prior to declaring the project to be complete.

The LE is integral to creating the safety case. They must establish the static and dynamic life safety systems and their design interfaces and review the test and commissioning plan to ensure a co-ordinated solution is achieved. The LE is an enabler of the safety case and will rely on it to execute their responsibilities during the life of a HRRB.

As an adjunct to the above definition, it is also important to understand how a LE would be engaged during the life of a building. This provides substance as to how the LE would be able to fulfil their role sufficiently to meet the requirements of the role as described in the definition.

Determining the need to commission a LE is dependent upon what action is being proposed to be carried out on the building, which includes constructing it. Therefore, the engagement of a LE can best be described against the three phases of the life of a building, those being construction, maintenance and demolition.

*Table 1* describes the board actions of the LE when compared against the three phases of the life of a building.

Phase	LE Actions
Construction	Establish safety critical elements of the design of the building based on its Safety Case
Maintenance	Ensure safety critical items defined in the Safety Case are reflected in the Operations and Maintenance Manual
Demolition	Review proposed demolition plans comply with guidance provided within the Operations and Maintenance Manual with respect to the structure and components of the plant for building services

*Table 1 –Lead Engineer actions during the life of a building*

To illustrate the role of the LE further the following fictional scenarios describe how they would provide guidance and advice to owners and occupiers of buildings.

### **Scenario 1 –New 15 storey residential block**

A developer seeks to construct a 15-storey residential block that contains 80 units in the outskirts of a town. The LE would be engaged from RIBA Stage 3 to develop the Safety Case for the building in conjunction with the design team.

**Scenario 2 –Modification to heating system to a 30-year old 12-storey residential block**

The plant within an existing residential block needs to be replaced as it is beyond its life expectancy and is repeatedly breaking down. The LE would need to be consulted to determine if any proposed replacement is compatible with all the safety critical components of the building based on its Safety Case. In instances where a safety case does not exist, the LE will have to develop one based on record information and surveys of the building.

**Scenario 3 –Change of use from a Commercial Property to a Residential Block**

A 20-storey commercial property is to be converted into a residential block. This is a significant change of use and will require the Safety Case to be reviewed and possibly redrafted as the mitigation measures for the management of the building will be significantly different. This would need to be carried out by a LE as they would be required to not only revise the Safety Case but also assist with the development of the operation and maintenance documentation.

**Scenario 4 –Planned engineering audits of a 16-storey residential building to review incremental change in use and the maintenance of life safety systems identified by the Building Safety Manager that could impact the safety critical elements of the building.**

A periodic audit would form part of a licence to operate the building that would require its owner to capture any alterations to it. Such changes could instantaneously or over time impact on the safety case process analysis and require the LE determine if these changes have undermined the Safety Case as part of the audit.

These changes could include type of tenancy, such as dwellings changing to multi tenancies, or a mix in owner/private or social tenant that would impact the risk profile assumptions in the Safety Case. Other examples include but are not limited to:

- Individual works that may occur as single activity
- A newly introduced service or technology
- A revised or enhanced system
- Tenants/landlords/managing agents adopting new technologies
- Replacement of appliance/s within the dwelling or the facility
- Change to existing systems or structure/fire compartment fabrics.

**Scenario 5 –Demolition of a 24-storey residential block with a transfer structure in its basement and at mid-height**

Prior to the demolition the LE will need to be consulted by the specialist contractor to determine that they have taken cognisance of the unique aspects of the structure when developing the demolition plan. This is to ensure that the risk of premature collapse of the structure is avoided during the proposed demolition works.

In terms of output, the LE would need to provide evidence that they have reviewed and/or created the Safety Case for the building. They would need to provide commentary on the design documentation with respect to the Safety Case.

The above definition and description of the engagement of a LE is being presented as a point of discussion within Working Group 1 of the Competence for Building a Safer Future programme and would invite all its members to provide feedback on it.