Submission of Feedback by the Chamber of Engineers:

Minimum Energy Performance Requirements in Buildings (Document F)

Engineers are critical players in the multi-disciplinary chain of professionals in the building & construction industry. As buildings become ever more complex and with correspondingly stricter requirements, the engineer is required at the earliest design stage to ensure a building that is safe, habitable and energy efficient throughout its lifecycle. Energy requirements of buildings is a significant component of human energy consumption.

The Chamber of Engineers (CoE) has compiled this feedback document to provide the perspective of *Inġiniera* on the proposed new Minimum Energy Performance Requirements in Buildings (Document F). We have also incorporated important observations on the existing Energy Performance Certificate (EPC) system, given that Document F fundamentally informs it. The forthcoming changes to Document F should, therefore, significantly influence future modifications of the EPC system.

Recommendations on the proposed Document F:

1. Inclusion of Indoor Air Quality, Comfort, and Sustainable Mobility

The CoE acknowledges that the proposed Document F is proposing bold improvements regarding overall building energy performance rating, building envelope components, building energy systems, and renewables, however, it is crucial to note that the EU Energy Performance Directive has broadened its focus beyond just energy efficiency and renewable energy. The Directive now includes requirements related to indoor air quality (e.g., minimum fresh air requirements), indoor comfort (e.g., minimum set temperatures), and minimum electric vehicle charging points. Unfortunately, the current proposed Document F is not yet reflecting this wider vision. The requirements in these three areas (indoor air quality, indoor comfort, and sustainable mobility) appear to be insufficient.

We recommend that these areas are given due importance in the updated Document F to ensure compliance with the evolving EU Energy Performance Directive and to be reflected in the EPCs. Such requirements will eventually impact the energy performance of buildings in terms of increased energy consumption. In case that the current EPCs exclude these requirements thenfuture EPCs when would show an increase in Energy consumption compared to the baseline energy rating created by current EPCs. This would result in a lower energy rating due to the increased consumption resulting from implementing the same requirements of the Energy Performance Directive.

2. Alignment with Existing Legislation and Tools

The proposed Document F appears to exhibit inconsistencies with other pieces of legislation and tools which are used in Malta to determine energy performance certification and implement energy efficiency and renewable energy systems. Notably, Title 4 with Part 1 refers to onsite renewable energy generation as

inclusive of solar photovoltaic systems, heat pumps, geothermal systems, and solar thermal collectors. In harmony with the building fabric, these are expected to reduce the overall Primary Energy Demand of a dwelling.

However, this description appears inconsistent with the capabilities of the EPC software EPRDM and SBEM. Specifically, these tools do not consider solar heating as renewable energy (SBEM), nor do they account for the renewable energy share of heat pumps (EPRDM and SBEM). This is in contrast with the guidelines provided in Annex VII of the Renewable Energy Directive 2018/2001.

3. Definition of the Term "Nearby"

In line with the EU Energy Performance of Buildings Directive (EPBD), the proposed Document F mentions the installation of renewable energy sources on-site or nearby. As it stands, the term "nearby" has not been defined within the context of the Maltese islands.

The CoE suggests that the term “nearby” be explicitly clarified to include areas such as parking spaces owned by the property, or public spaces in the vicinity such as gardens and open spaces.

4. Conflicting U-Value

Document F Part 1, Figure 1 shows a roof U-Value limit of 0.59 W/m^{2}K whereas Table 2 stipulates roof U-values limit of 0.4 W/m^{2}K. This value should be aligned in the technical document to avoid ambiguity.

5. Misalignment with the EU Renewable Energy Directive in Heat Pump Calculations

Section 4.2.3 iv) of Document F Part 2 seems to fall short in aligning with the stipulations outlined in Appendix VII of the EU Renewable Energy Directive 2001/2018, particularly concerning the calculation of the renewable energy contribution of heat pumps.

6. Inconsistencies in Relating PV Output to Hot Water Demand

Section 4.2.2 ii) of Document F Part 1 raises concerns due to its assumption that the kWp of photovoltaic (PV) systems directly correlates with the demand for hot water. This oversimplified approach fails to account for the crucial impact of the PV panels' inclination and orientation. Vertical PV panels, for instance, will yield significantly less energy — roughly half as much — compared to optimally inclined PV panels facing the same orientation.

7. Clarification Required on Overall Primary Energy Demand for Buildings Non-compliance

The draft Document F mandates the submission of a report in instances where a renovated building falls short of achieving the minimum overall Energy Performance Certificate (EPC) values. However, it remains unclear whether the Planning Authority will require this report during the application for major renovation. Further

clarification is also needed on whether a building permit would be granted irrespective of the applicant's ability to present a robust justification for non-compliance with the minimum requirements of Technical Document F.

8. Omission of Certain EU EPBD Provisions

Document F overlooks some of the optional measures outlined in the EU Energy Performance of Buildings Directive (EPBD), including the establishment of minimum requirements for a smartness indicator and a building passport.

In addition, the directive is anticipated to undergo an update by the end of 2023, which will enforce a minimum enhancement in the energy class for building renovations. Regrettably, Document F fails to reflect this impending change and does not adequately prepare for the new stipulations.

9. Greener Heating Methods

The CoE is conscious of the European Union's direction towards phasing out fossil-fueled heating by 2035, and for new buildings to be emission-free from 2028, ultimately resulting in banning fossil fuel boilers by 2029. If well-maintained and well-operated, heat pumps far outpace boilers in terms of efficiency. The current allowance for heating installations which use diesel fuel or light heating oil appears to contradict the country's transition towards cleaner electricity generation

The CoE recommends a strategic approach aimed at gradually boosting the utilisation of heat pump technologies. This approach would foster a supportive environment which prepares the local industry for the inevitable shift towards greener alternatives. It is also essential to reflect these incremental changes in the next revision of Document F, which should occur in five years time. This phased plan will ensure a smoother transition and less disruption to the local industry.

Recommendations on the EPC System:

The CoE understands that the focus of this consultation, the Document F, underpins the EPC system, and therefore believes that relevant changes in the former should logically be reflected in the latter. A more efficient, effective, and locally adapted EPC system would undoubtedly facilitate the realisation of the minimum energy performance requirements outlined in Document F. The following recommendations are being made:

1. The current EPC system is perceived to hold minimal tangible value in property transactions. Instead, it appears as a non-value adding process to property transactions rather than serving its true purpose to promote more energy-conscious property decisions.

2. The current EPC system is missing a prescriptive minimum on energy ratings of buildings. This omission makes it difficult to genuinely ascertain the quality of our building stock, which we believe should be addressed through benchmarking.

3. The currently used methodologies to create the EPC, particularly iSBEM and EPRDM, are seen as flawed from a technical standpoint. These methods exhibit underlying assumptions which are inappropriate for our local context. Such methodologies deserve to be revised to fit Malta's specific building standards and conditions.

4. The current approach where the EPC alone is responsible for guaranteeing energy performance seems inadequate. To truly drive energy performance, there needs to be a more holistic effort that encompasses a range of measures, not solely focused on the EPC.

5. EPCs were designed to provide a comparative metric for buildings' energy efficiency, similar to the energy rating on labelling of appliances. However, the implementation has been challenging at best. In the absence of significant fiscal incentives or real market energy prices, buyers prioritise other factors (e.g., location, size, type). EPCs have been most effective in places where strict minimum energy ratings are enforced, and the EPC serves as a guarantee that these standards were met. Such enforcement is currently being led by banks, but instead it should be the government that enforces a minimum energy rating system.

6. The CoE strongly recommends that the EPC and the Document F are underpinned by robust building regulations framework, which is direly needed.

In conclusion, the CoE trust that these recommendations from the engineering community will be useful in the consolidation of the Minimum Energy Performance Requirements in Buildings. We remain committed to contributing to ongoing discussions on these vital issues, pushing the boundaries of what is achievable in building energy performance standards. The CoE makes itself available to authorities to further elaborate this feedback and give advice and support where needed.