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BUILDABILITY MOMENTUM ACROSS PROJECT STAGES: EMPIRICAL INSIGHTS FROM RIBA PLAN OF WORK TOWARDS SUSTAINABLE CONSTRUCTION

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ABSTRACT

Buildability deals with the optimal integration of construction knowledge at various project stages to achieve the overall project objectives. Incorporation of buildability improves the construction project performance in terms of its cost, quality, productivity, safety, and results in early completion. This study investigates how buildability considerations manifest throughout the RIBA Plan of Work stages, from Strategic Definition-Stage to In Use-Stage7. Using a qualitative methodology, this research draws on semi-structured interviews with a cross-section of industry stakeholders, including designers, contractors, project managers, consultants, and specialists, to uncover how knowledge, stakeholder input, and decision-making practices influence buildability at each stage. Thematic analysis embedded in phenomenological research philosophy was adopted as the data analysis method. The findings show that buildability is often underdeveloped in early design due to limited contractor involvement but becomes more prominent in Spatial Coordination and Technical Design stages through logistics, sequencing, and specialist input. Handover and Use Stages underscore the overlooked importance of commissioning, handover, and facilities management for ensuring project continuity and usability. The study introduces the Buildability Momentum Curve, a visual framework mapping the rising and falling influence of buildability insights across all RIBA stages. This curve underscores the importance of early integration and sustained knowledge flow to mitigate fragmentation and performance inefficiencies. The findings have practical implications for procurement strategies, project governance, and knowledge management systems. By conceptualising buildability as a dynamic and evolving construct, the paper advocates for a more integrated and anticipatory approach to design and delivery that spans the entirety of the project lifecycle.

Keywords: *Buildability; Constructability; Construction; RIBA Plan of Work.*

1. INTRODUCTION

The construction sector plays an essential role in the socio-economic development of a country (Rathnayake et al., 2022). Thus, success in the construction industry is undeniably vital for the growth of a nation (Osuizugbo, 2023). Lack of buildability was identified as a key factor that directly impacts the performance of a construction project

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(Samimpey & Saghatforoush, 2020). This is because the impact of buildability spans across construction projects, covering the entire procurement process and construction methods (Ansyorie, 2019; Samimpey & Saghatforoush, 2020). Buildability deals with the optimal integration of construction knowledge at various stages to achieve overall project objectives (Wimalaratne et al., 2021). There is a consensus that the design stage is critical for implementing buildability (Naoum & Egbu, 2016). Although some researchers established that buildability measures should be implemented through various stages of construction projects (Aina & Wahab, 2011; Osuizugbo & Oshodi, 2022), some researchers stated that buildability is a project management technique that runs throughout a construction project (Ding et al., 2019; Jadidoleslami et al., 2018; Kifokeris & Xenidis, 2017). Consequently, the existing body of knowledge does not explicitly articulate the presence or continuity of buildability momentum across the various stages of project development. Therefore, this study aims to explore buildability momentum across project stages by drawing on empirical insights from industry practitioners. In this study, "momentum" serves as a metaphor to describe how buildability can accelerate, stagnate, or regress depending on the application of knowledge across project stages. To systematically examine buildability momentum throughout a construction project, the RIBA Plan of Work 2020 was adopted as the structured framework for analysis.

2. LITERATURE REVIEW

2.1 CONCEPTUALISING BUILDABILITY

Buildability has emerged as a direct result of research and practical applications aimed at improving construction projects' efficiency, cost effectiveness, and quality (Griffith & Sidwell, 1997). It is a concept that deals with the optimal integration of construction knowledge and experience at various project stages to achieve the overall project goals (Osuizugbo et al., 2024; Wimalaratne et al., 2023). The Construction Industry Research and Information Association (CIRIA) in United Kingdom (UK) has published the first definition of buildability as, "the extent to which the design of a building facilitates ease of construction, subject to the overall requirements for the completed building" (CIRIA, 1983).

Construction Industry Institute in United States (CII) defined Constructability, a similar term to buildability as, "The optimal use of construction knowledge and experience in planning, design, procurement, and field operations to achieve overall project objectives" (CII, 1986).

Later, the Building Construction Authority in Singapore (BCA) code of practice defined buildability as, "The extent to which the design of a building facilitates ease of construction as well as the extent to which the adoption of construction techniques and processes affects the productivity level of building works" (Building Construction Authority, 2022).

The above definition of buildability varies slightly from territory to territory. Still, the common concept is to foster efficient decision making by fully reflecting construction knowledge and experience throughout the various stages of the project (Lee et al., 2018). Accordingly, the main components of buildability include knowledge sharing, throughout various project delivery phases, and improving construction project performance. As such the key construct of buildability includes knowledge sharing across the stages of a project.

Adding to this, Wimalaratne et al. (2023) identified knowledge sharing as the key driver of the buildability concept.

2.2 KNOWLEDGE SHARING IN CONSTRUCTION

As stated above, 'knowledge sharing' has been identified as the key driver within buildability concept. Knowledge is an exclusive concept. Tsoukas and Vladimirou (2002) described knowledge as, "the individual capability to draw distinctions, within a domain of action, based on an appreciation of context or theory, or both". There are two main types of knowledge: tacit knowledge and explicit/codified knowledge (Nishihara et al., 2017; Nonaka & Konno, 1998; Nonaka & von Krogh, 2009). Explicit/codified knowledge can be expressed in words and numbers and shared through data, scientific formulae, specifications, manuals, and the like (Hoe, 2006). Codified knowledge is generally stored mechanically or technologically in different media (Nonaka, 2007; Nonaka & Konno, 1998) and is readily transmittable between people through manuals and specifications.

Tacit knowledge, on the other hand, is not easily visible. Tacit knowledge is highly personal and hard to formalise, making it difficult to share with others (Hoe & McShane, 2010). Therefore, Tacit knowledge partly consists of hard to pin down technical skills (Nonaka, 2007). Subjective insights, intuitions, and hunches fall into this category of knowledge. Although some research suggests a third type of knowledge as 'implicit knowledge', which is the practical application of explicit, focusing on the two main types of knowledge is relevant in this study.

Knowledge transfer, exchange, or sharing does not have an agreed upon definition, and the terms are often used interchangeably with different connotations, such as information transfer. Nonaka (1994) stated that even though there is a difference, knowledge is formed due to information flows. In construction project delivery teams, knowledge gained through experience can be codified and shared as information; therefore, the terms are interrelated (Garcia & Mollaoglu, 2020). As such, Knowledge sharing involves deeper experiential understanding throughout the construction project delivery process.

2.3 THE CONCEPT OF "BUILDABILITY MOMENTUM"

Many research studies have triggered the emergence of the concepts of buildability carried out around professional fragmentation and poor construction performance in major construction capitals around the world (Wong et al., 2006). In the majority of the studies, there is a consensus that the design stage is critical for implementing buildability (Arditi et al., 2002; Lam & Wong, 2011; Naoum & Egbu, 2016). Adding to that, Low (2011) highlighted that the earlier the considerations towards buildability, the better the potential to influence the outcome. Owing to this, Samimpey and Saghatforoush (2020) emphasised that the presence of a proactive contractor at the pre-construction stage could remarkably enhance the project's buildability. However, the studies conducted by CIRIA, the first to coin the term 'buildability', found that buildability problems widely occur in the construction stages due to a lack of cooperation between designers and planners (Naoum & Egbu, 2015). In addition, CII (1987), in their "Constructability concept file", embraced all stages in building development, which had their respective impacts on achieving the overall project requirements for integrating construction knowledge. Agreeing with CIRIA and CII later studies, many researchers also criticised limiting buildability only to the design stage and argued that improvement measures are to be carried out throughout the whole building process (Griffith & Sidwell, 1997; Samimpey

& Saghatforoush, 2020). For instance, a recent study by Osuizugbo (2020) showed that buildability considerations should start at early project planning and designing stages and continue throughout all construction project stages.

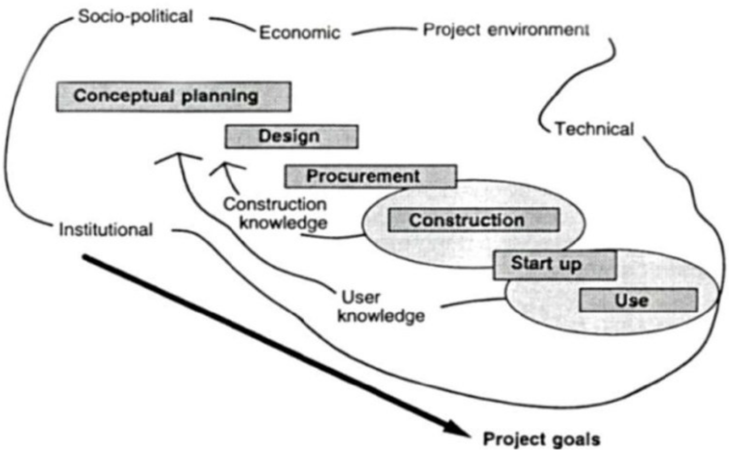

Figure 1: The wider framework of buildability
Source: (CIIA, 1993)

Figure 1 published by CIIA (1993), vividly shows the applicability of buildability in various stages of the construction project.

2.4 USING THE RIBA PLAN OF WORK 2020 AS THE FRAMEWORK

As outlined above, knowledge sharing is essential at every stage of the project delivery process to maximise buildability (Samimpey & Saghatforoush, 2020). Therefore, the selection of a suitable plan of work to capture the stages of the construction project delivery process is necessary. In this regard, several process maps, or plans of work, lay out the generic phases of a construction project. Table 1 below highlights the most prominent examples.

These frameworks and models have been helpful in developing a common language for construction sector activities. Amongst them, the Royal Institute of British Architects (RIBA) developed the most well-known plan of work. The RIBA Plan of Work outlines the activities involved in strategic planning, managing, designing, and administering building construction projects (Haylock, 2021). It organises these activities into several 'work stages'. Therefore, to capture the construction process comprehensively, the RIBA 2020 plan of work is selected as the key process for this study. Further, this plan of work is neutral to all the procurement methods.

Table 1: Comparison of plans of work
Source: (RIBA, 2020)

	Pre-Design		Design				Construction	Handover	In Use	End of Life
RIBA (UK)	0 Strategic Definition	1 Preparation and Brief	2 Concept Design	NOT USED	3 Developed Design	4 Technical Design	5 Construction	6 Handover & Close Out	7 In Use	NOT USED
ACE (Europe)	0 Initiative	1 Initiation	2.1 Concept Design	2.2 Preliminary Design	2.3 Developed Design	2.4 Detailed Design	3 Construction	NOT USED	4 Building Use	5 End of Life
APM (Global)	0 Strategy	1 Outcome Definition	2 Feasibility	NOT USED	3 Concept Design	4 Detailed Design	5 Delivery	6 Project Close	7 Benefits Realisation	NOT USED
NATSPEC (Aus)	NOT USED	– Establishment	– Concept Design	– Schematic Design	– Design Development	– Contract Documentation	– Construction	NOT USED	– Facility Management	NOT USED

Accordingly, the construction process development stages for this study are: Stage 0-Strategic Definition, Stage 1-Preparation and Briefing, Stage 2–Concept Design, Stage 3-Spatial Coordination, Stage 4–Technical Design, Stage 5-Manufacturing and Construction, Stage 6–Handover, and Stage 7–Use.

3. RESEARCH METHODOLOGY

Phenomenology is established as the philosophical stance for the study, and abductive reasoning is the research approach (Saunders et al., 2019). Data was collected using phenomenological interview techniques and the analysis was conducted using thematic analysis. Interviews were conducted following a semi-structured guide developed with the findings from the literature. The research strategy for this research is selected as exploratory survey (Saunders et al., 2019). The data analysis process was supported by a computer aided software program called NVivo 14. The study corroborated the findings through internal validation, thus increasing their acceptability. The following Table 2 presents the details of the respondents.

Table 2: Respondents' profile for data collection.

Ref:	Discipline of Services	Years of Experience
R1	Project Manager-Consultant	30
R2	Project Manager-Consultant	30
R3	Construction Manager-Contractor	28
R4	Construction Manager-Contractor	30
R5	Estimator/Tendering Manager-Contractor	16
R6	Commercial Manager (Post-Contract)-Contractor	16
R7	Estimator/Commercial Manager (Pre-Contract)-Consultant	28
R8	Schedulers/Programme Manager-Consultant	34
R9	Engineer-Consultant/Employer	20
R10	Engineer-Contractor	17
R11	Architect	34
R12	Estimator/Commercial Manager (Post-Contract)-Consultant	17

Professionals with over 15 years of experience with an understanding of buildability were recruited for the data collection through purposive sampling method. Participants were comprised with various stakeholders in the construction industry, such as designers, consultants, contractors, and specialists.

This study has obtained ethical approval from the University of Moratuwa Ethics Review Committee (Ethics Declaration Number: EDN/2022/013).

4. ANALYSIS AND DISCUSSION

This section presents the thematic findings from the qualitative interviews, structured according to the RIBA Plan of Work stages (0–7). Each stage reveals how buildability is understood, operationalised, and challenged throughout the life cycle of a construction project specifically in relation to its key driver, 'knowledge sharing'.

Literature synthesised that buildability discourse focused more on the early stages of construction projects (BCA, 2022; Moore, 1996). According to the research findings, buildability is ongoing throughout the work stages. Supporting this assertion, a recent study by Osuizugbo et al. (2024) introduced a conceptual framework for the execution of 'buildability assessment' during the construction management phase, diverging from the concept's traditional constraint. The literature review did not state a specific type of knowledge applicable to a particular stage of work. However, research findings acknowledged the presence of different knowledge requirements across various work stages of the construction project. Furthermore, literature shows that the stakeholder most responsible or capable of integrating buildability at a specific stage of the construction process varies (Ansyorie, 2019; CIIA, 1993). Agreeing with them, the findings found that the responsibility of buildability shifts among stakeholders throughout the different work stages. The following sub sections summarises the discussion under each work stage.

4.1 Stage 0 – Strategic Definition

The findings indicated that tacit knowledge dominates at this stage, and early engagement with experienced professionals is critical. R3 stated, "*At the strategic* *definition stage, very defined, established data driven knowledge has to be there",* while highlighting the people's contribution. It was also noted that limited direct buildability input, but foundational understanding begins at this stage. R1 and R11 were the key contributors to sharing ideas. Key stakeholders involved in this stage include the client, risk managers, financial institutions, environmental consultants, and senior executives.

At this early stage, buildability is primarily framed through strategic foresight, client clarity, and stakeholder alignment. Several participants emphasised the value of engaging experienced consultants to advise clients on defining realistic project scopes and aligning them with future operational expectations. Interviewees highlighted the need to integrate life cycle thinking from the outset to improve sustainability. Four key themes emerged as: client readiness, early expertise, feasibility thinking, and alignment with user needs.

4.2 STAGE 1 – PREPARATION AND BRIEFING

The respondents confirmed that codified knowledge becomes more relevant at this stage. Cost forecasting and early design estimation were found paramount to improve buildability. R1, R3, R10, R11, and R12 extensively shared their ideas under this theme. Key stakeholders involved include the architect (primary) and other professionals such as commercial managers, structural engineers, clients, project managers, consultants, and environmental experts. Merging the initial stages, R5 stated "So *in Strategic definition stage and preparation and briefing stage obviously clients knowledge and then the QSs and engineers and architects will be using their experience and high level type of knowledge to make decisions*".

At Stage 1, participants stressed the importance of brief robustness, including contributions from contractors and specialists where feasible to ensure sustainable construction outputs. Several interviewees flagged the risks of incomplete briefs, which often lead to later rework and coordination issues. Early contractor involvement (ECI) was advocated, where appropriate, to mitigate these risks and ensure buildability is embedded in early decisions. Key themes that emerged under this stage include early contractor input, stakeholder management, regulatory compliance, and multidisciplinary collaboration.

4.3 STAGE 2 – CONCEPT DESIGN

This stage is the peak point for initiating buildability momentum. Visualisation through modern technologies found enabling problem identification and solution generation. The respondents highlighted the importance of stakeholders' tacit knowledge. The respondents revealed that this stage provides the most conducive platform to convert initial intentions into practical and constructible designs.

The transition from strategic intent to technical resolution of form is where tacit and codified knowledge intersect with increasing complexity. A recurrent sentiment expressed across the respondents (R2, R5, R10, R11, R12) was that buildability concerns must be embedded early within the concept design, with one participant arguing it was "*the best place to integrate buildability or address the buildability issue*" (R10). Another participant elaborated that the integration of practical construction knowledge at this point can facilitate decisions such as the use of climbing scaffolding systems in high rise construction, reducing the need to adapt formwork or methods post design (R2), which influences the buildability of the project.

Interestingly, some respondents (R5, R6, R8) noted the fragmentation of design and construction knowledge, citing that contractor insights are often excluded from Stages 2 to 4. One remarked: "*In separate systems, 2–3 and 4 are completely separated. Contractor's knowledge is not coming in. We should value the knowledge of the contractor*" (R3). This omission presents a barrier to buildability, underscoring the need for procurement methods that foster ECI or frameworks for interdisciplinary knowledge exchange. Another contributor advocated for a knowledge sharing model that bridges expert silos and enables cross disciplinary communication (R6).

This stage highlights a transition from conceptual vision to tangible frameworks that support construction feasibility. Thematic findings show the importance of collaborative environments, particularly with contractor and specialist inputs. Participants noted that decisions regarding structure, materials, and spatial logistics made here are foundational to improving buildability towards sustainable construction delivery. Key themes emerged include specialist engagement, interdisciplinary knowledge exchange, and decision making on material and structural feasibility.

4.4 STAGE 3 – SPATIAL COORDINATION

R3, R4 and R12 extensively shared their view under this theme. Stage 3 of the RIBA Plan of Work represents a critical transition from concept to detailed articulation of the design. In this stage, the implications of design decisions on buildability become more tangible, and the collaborative input of stakeholders intensifies. Input from end-users and technical collaborators at this stage were found vital. Findings from interviews reinforce the imperative of integrating multidisciplinary expertise and recognising the contextual variability of projects, particularly with respect to practical constraints and construction feasibility. According to R2, R7, and R5, tacit and codified knowledge merge during this stage. The interviews revealed a growing emphasis on collaborative detailing through Building Information Modelling (BIM) and other digital platforms. Although not always explicitly mentioned, references to spatial and technical design refinements (e.g., according to R2, "*fine-tune the design*") imply the use of digital coordination tools that synchronise diverse inputs.

At this point, the integration of multiple design disciplines becomes paramount. Interviewees reported that coordination errors and poor technology utilisation at this stage significantly compromise buildability. There was consensus on the need for increased digital maturity and clear interface management across systems. Many participants highlighted the effective use of technologies such as BIM for sustainable construction deliveries. Three key themes emerged include multidisciplinary collaboration and stakeholder engagement, digital collaboration, practical integration of tacit and codified knowledge, and spatial coordination.

4.5 STAGE 4 – TECHNICAL DESIGN

During Stage 4, the translation of conceptual ideas into executable components intensifies. Respondents widely acknowledged this stage as a pivotal zone for integrating practical, codified, and experiential knowledge to ensure that design outcomes are both constructible and aligned with project goals. For instance, R5 highlighted the convergence of scientific rigour and real-world intuition, stating "*detailed calculations based on theoretical stuff*" and the "*need to have your experience and knowledge*" to explain this. This aligns with R4's assertion that this stage requires a blend of "*codified* *knowledge and tacit understanding*" to ensure that complex technical decisions reflect feasible on-site applications.

Further, R4 underscored the "*technology involvement*" as essential across Stages 3–5, with Stage 4 being particularly dependent on accurate digital detailing to translate the concept into a buildable reality. Hence, buildability at Stage 4 is best understood not as an isolated exercise in technical design but as a cumulative expression of upstream knowledge flows, collaborative engagement, and contextual responsiveness. Both R5 and R7 agreed that codified knowledge leads in this stage, while tacit knowledge guides critical judgements.

Participants identified this stage as a critical buildability inflexion point. Key concerns included insufficient buildability reviews, unclear detailing, and the marginalisation of construction knowledge. Several interviewees advocated for structured reviews, involving both contractors and trade specialists, to test the buildability of drawings before final sign-off. Three key themes emerged under this stage, including convergence of practicality and precision, stakeholder expansion and technical interdependence, and interdisciplinary detailing and digital collaboration.

4.6 STAGE 5 – MANUFACTURING AND CONSTRUCTION

The findings from Stage 5 present a pivotal shift in the nature and dominance of knowledge contributions to buildability. Unlike the early design stages, which were heavily conceptual and reliant on collaborative insight, this stage embodies the tangible execution of design intent, where tacit knowledge and real time problem solving are paramount.

A consistent theme across multiple respondents' responses is the recognition of the 'contractor's central role' in shaping buildability during this stage. Contractor led knowledge, described as both superior and practical, was repeatedly highlighted as essential for effective execution. For instance, R9 asserted that "*contractor's know how is more prominent*" proposing that their practical grasp often outweighs that of design professionals when it comes to complicated construction challenges. This sentiment is echoed by R10, who emphasised the value of the "*project manager's integrative knowledge*" and the "*critical importance of logistics and construction sequencing*", both of which directly influence the buildability of construction on site.

Another emerging theme was the "dual reliance on tacit and codified knowledge". While some participants (e.g., R5, R12) stressed the enduring importance of building codes, standard documents, and theoretical frameworks, there was a clear consensus that "practical, experiential understanding" accumulated over time and contextualised to site-specific conditions becomes dominant at this stage. The interviews revealed that presence of external stakeholders such as regulatory bodies, utility providers, financial institutions, and safety officers adds another layer of complexity to buildability. These contributors not only verify compliance but also influence temporal and logistical dimensions, reinforcing the need for early coordination and robust communication pathways established throughout RIBA stages.

R4 emphasised that "knowledge pooling" and collaborative discussions at this stage are essential for a coherent execution strategy. Meanwhile, R1 and R10 outlined the necessity for "multi-disciplinary expertise" including sustainability consultants, procurement and contract specialists, and IT systems managers, reflecting the operational complexity of modern construction. In Stage 5, tacit knowledge was found prominent.

Stage 5 findings confirmed that buildability manifests most visibly during physical construction. Participants highlighted the importance of logistics planning, sequencing, and tacit knowledge transfer from experienced personnel. Specialist subcontractors were noted as critical actors in resolving on-site challenges. The success of this phase relies heavily on the robustness of earlier design decisions and collaboration among the key stakeholders. Three key themes emerged include contractor's central role, dual reliance on tacit and codified knowledge, and knowledge pooling and collaborative discussions sharing tacit knowledge.

4.7 STAGE 6 – HANDOVER

Stage 6 marks the culmination of the construction process and the transition to operational occupancy. Although often perceived as a technical and procedural step, the findings reveal that this phase involves nuanced knowledge exchanges, significant specialist involvement, and a critical interface between design, construction, and end user operations. Respondents consistently referred to the need for dedicated professionals such as handover specialists, life safety consultants, MEP and low voltage engineers, and commissioning experts. For instance, R1 elaborated on the structured presence of "handing over specialists" whose expertise lies in ensuring functional integrity, testing, and life safety compliance of technical systems. Moreover, there is strong emphasis on the importance of codified and tacit knowledge working in combination. Certifications, compliance documentation, warranties, and standards based testing form the codified knowledge backbone of this stage. As R12 noted, municipal councils, regulatory bodies such as CIDA, and sustainability certification frameworks like LEED are all active participants in confirming the quality, safety, and sustainability of the final product. Yet, this technical closure is insufficient without practical orientation and user education, particularly when novel technologies are introduced into building systems. Participant R4 identified this educational role as crucial, stressing that the end users must be adequately informed and trained to operate the built facility efficiently.

Another key finding is the emergence of new stakeholders during this phase. For example, facility managers, asset managers, owner operators, and end users. These stakeholders were less visible in earlier stages but have now become central to the ongoing performance and maintainability of the building. Notably, some participants like R10 expressed a sense of limited agency at this stage, asserting that "*you're unable to do anything by the time the project reaches handover*".

This stage reveals the complexity of transferring the building from project teams to end users. Participants highlighted the role of handover specialists, particularly in commissioning safety systems and digital networks. Certification bodies and municipal councils' involvement in issuing final compliance documents was highlighted. Participants emphasised the importance of life safety consultants, knowledge transfer mechanisms, and client education, especially where novel technologies are introduced. Four key themes emerged under this stage as the specialist led nature of the handover process, documentation and compliance, the importance of codified and experiential knowledge working in tandem, and limited agency for knowledge sharing.

4.8 STAGE 7 – IN USE

Stage 7 shifts focus from construction to operational performance, user experience, and long term asset management. The findings reveal that buildability does not end at handover but continues through use based learning and operational feedback. End users and facilities managers take centre stage in this phase. R12 and R3 emphasised the involvement of these stakeholders in maintaining the design's performance intent. R1 noted that "*the specialist could even be the end user*!" highlighting how operational insights can reveal issues overlooked during earlier phases. Contractors may remain involved post handover through warranties and support services (R12). According to R4, modern buildings often feature advanced technologies, but users may lack the digital skills to operate them fully. R4 and R12 recommended structured onboarding through user manuals, digital twins, and interactive training to bridge this gap. R3 added that involving facilities managers earlier in the process could reduce inefficiencies and improve lifecycle performance. R2 stressed the importance of lived experience and feedback stating, "*you might need to engage with the other stakeholders to fine tune the design*." R3 noted that architects and consultants often continue to assist post handover, indicating that professional responsibility extends beyond design and construction.

The final stage underscores buildability as a life cycle philosophy. Interviewees indicated that post-occupancy performance and usability are contingent on effective knowledge transfer, end user training, and responsive facility management. Further, in this stage, digital competency becomes more critical if the project comprises numerous innovative technologies. End users, facility managers, and maintenance teams emerge as new custodians of buildability. Key themes that emerged include harness specialist knowledge can reside with the end user, knowledge transfer and digital competency gaps, buildability as a life cycle philosophy, and feedback mechanisms.

5. BUILDABILITY MOMENTUM CURVE

The Figure 2 illustrates the momentum of buildability across the RIBA Plan of Work stages. It represents the intensity and nature of buildability contributions over time, integrating findings from Stages 0 through 7. Thematic analysis embedded in phenomenological research philosophy lead to creation of the buildability momentum curve. The curve shows that buildability is often underdeveloped in early design due to limited contractor involvement but becomes more prominent in stages 3–5.

Handover and Use Stages 6 and 7 underscore the overlooked importance of commissioning, handover, and facilities management for ensuring project continuity and usability.

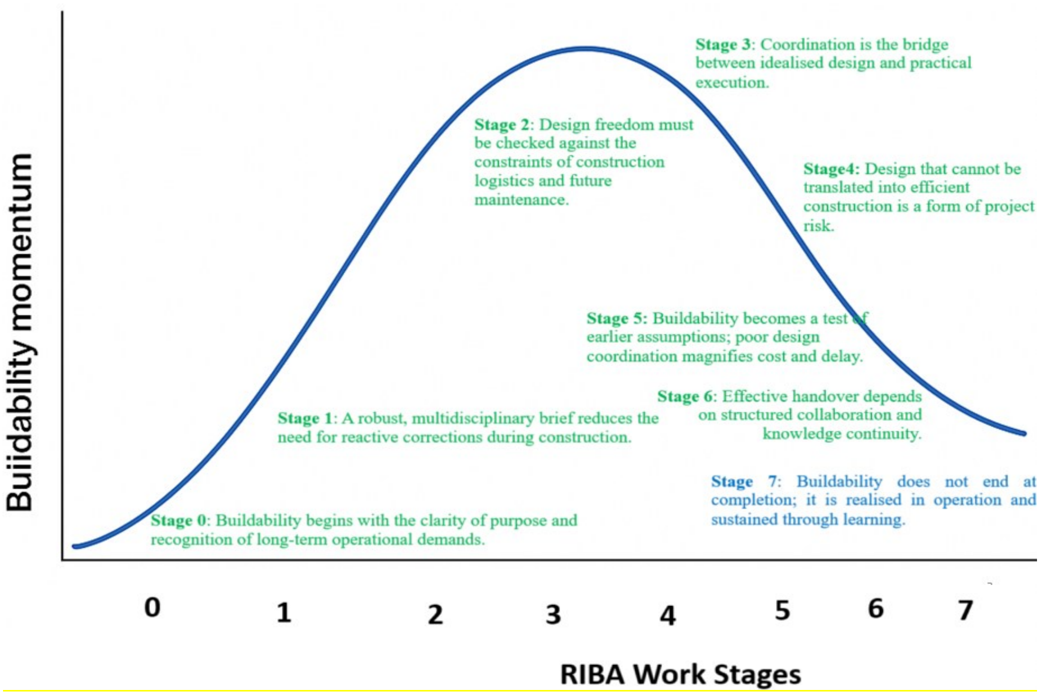

Figure 2: Diagram of the buildability momentum curve based on the RIBA Plan of Work stages

6. CONCLUSION

This research has provided a nuanced exploration into the dynamic integration of buildability across the RIBA Plan of Work 2020 stages, revealing a progressive accumulation of knowledge, collaboration, and decision-making that collectively fosters sustainable construction outcomes. By investigating stakeholder insights across all eight RIBA works stages, the study offers empirical evidence of the shifting nature and increasing significance of buildability considerations throughout a project's lifecycle. The findings indicate that while buildability begins conceptually in the early design stages, it gains substantial momentum in the technical design, manufacturing, and construction phases. These mid-stages are pivotal, acting as convergence points for tacit and codified knowledge from designers, contractors, and specialists, where theoretical planning transforms into practical execution. The contribution of the contractor and other implementation specialists becomes particularly critical from Stage 4 onwards, highlighting the importance of early contractor involvement and interdisciplinary collaboration. During later stages, particularly Stage 6 and Stage 7, the study finds that buildability evolves into maintainability and usability, necessitating structured knowledge transfer to facility managers, end users, and asset operators. Ultimately, this research positions buildability not as a static checklist, but as a momentum gathering complexity, insight, and impact across each stage of the RIBA framework. By capturing the voices and experiences of practitioners across disciplines, the study advocates for a more integrated, knowledge-driven, and strategically sustained approach to buildability that is essential for achieving resilient and sustainable construction outcomes in contemporary practice. The findings are limited to the ideas collected from the 12 professionals. The findings have practical implications for procurement strategies, project governance, and knowledge management systems within construction project teams. Additionally, the research bears the limitations arise from the specific data analysis methodology employed. Future research is encouraged to address these limitations by developing stage specific buildability image models using AI and comprehensive buildability checklists to support implementation across all project stages.

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