Outcomes of SBEnrc 2019 National Industry Research Workshops

Industry Challenges and Research Ideas

**Theme 1**: Housing – as Infrastructure and Human Service

**Theme 2**: BIM/Digital Engineering across Asset Lifecycle

**Theme 3**: Disruption to Transport/Land Use

**Theme 4**: Construction and Demolition/Waste

**Theme 5**: Procurement

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**Housing for Population Growth/Urban Intensification** - affordability at holistic level including transport, health, education, powers of attraction (warmer climate, natural parks, good neighbours, etc.) and toxic gas emissions being shaped? (e.g. building techniques, changing patterns around family households, lifestyles, space/flexibility/aging in place etc.).

**BIM/Digital Engineering** - potential problems include diluting understanding, information overload, and more formalized processes (e.g. construction of a granny flat to get mum/dad to live with you; Urban intensification and high-rise living – consider increasing transparency and if there were step by step processes to follow. Augmented reality? Increased emphasis on funds/international trends? Swearing existing assets – temporary re-use (land or buildings) for weeks or months or years? Mapping assets that the state owns/idle assets; Supply chain issues - town planning, integrated transport, parking (on street and off-street), electric charging and energy – what is the role of community in planning and decision-making.

**Disruption to Transport/Land Use** - roles of smart and sustainable transport. Strategy in implementation of housing standards for universal access/designs - e.g. corridor widths, h/b shows, disability access, door widths, biophilic urbanism etc. Clear definitions to what does accessibility, inclusive building imply? Good UCD from a refurbishment, new build or retrofit. What are the opportunities and challenges? What is the role of the property manager in this process? (e.g. maintenance) in a capital mix including trackless trams (?), modes of transport and an assessment of how they fit into Docklands and NAB funding. 

**Construction and Demolition/Waste** - mail to TSA and DA; projects in sustainability and climate change resistance. Other attributes of sustainable living – renewable energy etc.

**Procurement** - roles of supply chain, public procurement, tariffs, links in the chain. How are we paying for it? How does funding influence structural change and what is the role of construction? The role of designers, how are they approaching building sustainability? How is the role of the freestyle market or small business structured? What are the roles of the state? How are we working out who owns it? What is the role of the state/property managers in this process? How is it related to the economic value? Well-being and mental health outcomes with social and economic benefits, How can we encourage/adopt regulatory context, National Construction Code shortfalls (building code stipulates minimum standard) – should be a standard. AIA, looking at it but have view this is an add-on – should be standard. Carret and stick approaches – case of Global Green Building Council. A strategy e.g. develop a liveability star rating for housing. Electricity, water, bils - accessibility - Building industry associations, investors, consumers, owners and tenants, education for industry to adopt. Are we being pragmatic, what are the issues? How can we get there? How can we agree?

**Them 1**: Liveable Social and Affordable Higher Density Housing

**Theme 2**: Leveraging an Integrated Information Lifecycle Management Framework – Building and infrastructure

**Theme 3**: Freight Transport and Infrastructure Connectivity to Improve Network Outcomes of End markets…

**Theme 4**: Capital/Asset/Liability: Levies, sustainability, resiliency, shared ownership, smart infrastructure (existing and new), Scalable – regional and capital city/link to the digital grid. Differences in BIM maturity across agencies, changes in the future – Internet of things (IoT), blockchain, sensors on smart vehicles. The role of data governance and digital legacy, link to resilience – what is critical?, Practical impact and uptake; People aspect - automation (people fear loss of jobs, human impact? E.g. seeing the value of a collective? Changes in working practices and workspaces: is there a role for mixed workspaces? People and sustainability, educating people and challenge is developing a training program off the back of the framework; Skills uptake and confidence; Training of the next generation and their digital capabilities; What is the role of the training provider? What is the role of the government team – be clear on asset information requirements. Research – develop metric of different methodologies of managing a built asset – methodologies that clients can manage and maintain the data. The cost to maintain could be expensive – could outweigh benefits; Building better information management – take out BIM and insert digital record, Value of information can decrease if not prepared to maintain. Traffic modelling; Underground utilities – through corridors; management around reserves for other underground facilities e.g. NBN; Fixed assets – an asset should have a digital profile from day one of life – what does it do – what is the role of the component as part of the system?

**Theme 5**: Transform and Urban Form Futures – City/Regional planning; Scenario planning - modes of transport/urban densities – multi-modal mix and vision are going to impact decision – what is the role of the digital twin; how to make procurement decisions – real costs of investment decisions (cost to state and cost to customer); Links to housing and community needs; Define Utopia – vision for roads, walking, cycling; maintain a standard of living – high level thinking – how to achieve quality of life; Business models – what is the role of the use case for a digital twin? How do we get there, how do we make it happen? What is the role of community engagement? What is the role of the heritage community with privatisation of heritage assets?

**Theme 1**: Industry Management Facility Asset Management, Buildings and Infrastructure - 10 year plan for 18,000km across WA (15 Master projects include) – real-time data, asset health, condition, maintenance needs (Aust & Intl) investing in digital twins

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**Supporting Australian BIM/DE Initiatives Through Industry Case Studies** - Australia-wide initiative - QLD strategy => national value linked projects. How are we delivering this? How are we approaching this? What is the role of the state/property managers in this process? How is it related to the economic value? Well-being and mental health outcomes with social and economic benefits, How can we encourage/adopt regulatory context, National Construction Code shortfalls (building code stipulates minimum standard) – should be a standard. AIA, looking at it but have view this is an add-on – should be standard. Carret and stick approaches – case of Global Green Building Council. A strategy e.g. develop a liveability star rating for housing. Electricity, water, bils - accessibility - Building industry associations, investors, consumers, owners and tenants, education for industry to adopt. Are we being pragmatic, what are the issues? How can we get there? How can we agree?

**Theme 1**: Social Housing Asset Management - Managing portfolio of assets – how you make a decision (asset portfolio management) in a capital constrained environment; Tenancy manager – integrating what they do and services and support systems they need – people and place e.g. people come to house share centres for assistance, not just provision of house share pathway opportunities to build capacity to sustain tenancies in the private market; Bringing in consumer not just Govt – brings in DE over life cycle, capabilities, - trying to embed sustainable living into people's everyday life; faced with many competing issues (e.g. affordability) looking at ongoing maintenance, age, etc; Major investment institutions – superannuation groups (potential community/staff development opportunity for their staff) – and potential FIN's into their organisations; Off-site manufacturing for affordable quality social housing

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**Project 1.7.1**: Liveable Social and Affordable Higher Density Housing

**Project 2.7.2**: Leveraging an Integrated Information Lifecycle Management Framework – Building and infrastructure

**Project 3.7.3**: Freight Vehicle and Transport Network Connectivity to Deliver Mutual Benefits

**Project 1.7.4**: Future Streets and Corridors: A New Economic Assessment Tool Based on Place and Movement

**Project 1.7.5**: Creation and Stimulation of End Markets for Construction and Demolition Waste

**Project 2.7.6**: Sustainable Procurement