

# 8 The Sustainable Temporary Adaptive Reuse (STAR) Toolkit: A Solution for Underused and Vacant Buildings

*Gill Armstrong, Sara Wilkinson,  
Kusal Nanayakkara, Robert Fleck,  
Mark Willers, and Juanee Cilliers*

## Introduction

The COVID global pandemic necessitated significant changes in people's lifestyles and work habits (Marzban et al. 2023). In response to the pandemic, many governments, including Australia's, implemented lockdowns, allowing people outdoors only for short durations and limited activities to curtail the disease's spread. Given advances and changes in technology many people were able to switch to working and learning from home (Verma et al. 2023), which allowed most economies and businesses globally to keep functioning. By 2022, due to the advancements in vaccination protocols, most of the population was safeguarded against the prevalent variants of COVID. With the cessation of lockdowns, the pertinent question emerged: Was it indeed appropriate to resume office-based work?

Many office workers had gotten used to working from home and enjoyed the flexibility it offered, especially where they had caring responsibilities for older people and/or children. Workers argued that their performance had been maintained, and in many instances increased in quality and quantity, so why did they need to return to the office? Admittedly not all workers felt this way, some younger people, or newly employed staff, preferred to base themselves in the office to learn the organisational culture and to create a network (Nanayakkara et al. 2023).

However, overall, there is considerably less office worker use of workplaces than pre-COVID (Marzban et al. 2023). This has been compounded with the low unemployment rates, which has made employers reluctant to 'force' workers back to the office. In some cities like Melbourne, Australia, there has been more occupancy on Tuesday, Wednesdays, and Thursdays during the week, with Mondays and Fridays being very quiet. The low rates of office occupancy have a ripple effect, as local cafes and retailers have far fewer customers and this has led to increased vacancy in this part of the property market (Armstrong et al. 2023). The result is underuse and vacancy in city centres, Central Business Districts (CBDs), or Downtowns. How long will this last? Is it temporary or permanent? Many have theories (Armstrong et al. 2023) but at this point, nobody knows. Questions arise, such as: What can be done with this vacancy?

The Sustainable Temporary Adaptive Reuse (STAR) Toolkit project is an attempt to gain a deeper understanding of this post-COVID trend and to develop a series of resources, the toolkit, to facilitate short-term, or temporary reuse of commercial property in Sydney (Armstrong et al. 2023). The STAR Toolkit is a knowledge exchange research project that takes a qualitative approach to delve deeper into this complex issue that cannot be easily quantified (Creswell 2013).

The project takes a co-design approach to developing the toolkit, by engaging with stakeholders with a keen interest in the concept of STAR from a professional or personal perspective. The stakeholders engaged are from industry (property owners, advisors, and building designers such as architects and engineers), built environment regulation and advocacy (planning approval and construction code compliance, city-shaping or strategic planning), and different communities seeking new space. In addition, the research team consider themselves stakeholders with significant experience as property advisors in financial investment and asset management, surveying, architecture, and planning.

The tools within the STAR Toolkit are under development at the time of writing, and have been identified through a series of knowledge exchange workshops, both in person and online. The selection of the tools has been informed by pragmatic discussions between the researchers and the stakeholders as to what resources are needed to normalise the concept of STAR in practice, and what resources are perceived to be needed to support STAR evaluations and uptake. The ideas proposed for tools include:

- A STAR Toolkit website – an accessible, one-stop-shop for all things STAR.
- A STAR Guide – a description and definition of STAR as an asset management option for a broad layperson audience.
- STAR Ideas – an architectural exhibition documented to visualise examples of what STAR can be to spark the imagination.
- STAR Case Studies – real examples of STAR in Australia and beyond.
- Regulatory checklist – guidance on where to start when considering compliance with the National Code of Construction for building owners and end users of STAR space.
- Planning pathway – a clear map of the planning conversations needed to guide a successful temporary change-of-use planning application.
- STAR Contexts – a series of videos that capture the conversations from multiple expert perspectives about the challenges facing cities that STAR can help resolve.
- STAR Space - a place where building owners and space seekers can connect.
- ESG Scorecard – a ratings tool of ESG values or metrics that can be used to guide STAR evaluations and decisions.
- Research articles – publications leading from the STAR project journey for others to discuss, share, and build on to grow the concept of STAR as a sustainable asset management option to increase the usefulness of existing buildings so that they are fully utilised for as long as possible.

Whilst our focus for the first STAR Toolkit is Sydney, Australia, the issues detailed in this chapter affect many cities globally and some findings and outputs could be transferable.

This chapter sets out a detailed analysis of the Sydney commercial property market, the shocks and stresses it experiences, occupancy vacancy, and the concept of the STAR Toolkit and how this might address short-term vacancy in the CBD. The issue of Environmental, Social, and Governance (ESG) and its growing importance in commercial property is then discussed along with STAR potential. The chapter concludes with a review of some of the legal and regulatory compliance issues that might impact STAR's potential.

### **Shocks and Stresses in the Built Environment**

Just as the online shopping boom reduced the demand for commercial brick-and-mortar stores, the recent global pandemic has shaken the property market with many employees demanding flexible work arrangements. The rebound from the post-lockdown workscape has left global cities at varying levels of activation, with some cities left underoccupied, and others having reimaged their use cases (Glaeser 2022; Fiorentino et al. 2022). A reduction in the face-to-face workforce has led to significant vacancy in commercial spaces and large and medium-sized businesses re-evaluating their needs for large commercial leases. With a reduction in the onsite workforce, and downsizing of many major organisations, prime real estate needs to ease the conditions for leases, or at least incentivise occupancy (Fiorentino et al. 2023). As such, leases that would previously be reserved for significant businesses are now available to lower tier companies, which facilitates a shift up the commercial leasing ladder. This has ultimately created an issue with vacancy and underutilisation of D-grade real estate, which is starting to have flow-on affects to the ground level market. In the Australian commercial office market, top-quality stock is graded Premium, followed by A, B, C and D. The top-quality stock is owned and managed by commercial entities, whereas the lowest grade stock is more likely to be long-term owned by 'mum and dad' investors.

The increased vacancy of D- and C-grade real estate has resulted in a lower demand for retail services and cafes on the ground level in Australian major cities and globally (Greenhalgh 2022; Florida et al. 2021). The primary issue with ground-level vacancy is that regions appear to be dead or dying to the public, which creates a stigma about certain areas in urban centres, and further serves to devalue the potential commercial opportunities (Greenhalgh 2022). A loss of ground-level retail and cafe services and the appearance of a dead or dying area contributes to the overall feeling of a city that is losing or has lost its vibrancy, which would have significant economic impacts for both the domestic and international tourism markets. The responsibility of revitalising these areas that have succumbed to vacancies and underutilisation ultimately falls to the local government and councils, typically through the implementation of social and economic activities and initiatives. One example is the City of Sydney, Australia, which eased outdoor dining requirements, and converted several thousand street parking spaces to outdoor

seating for restaurants and cafes to reshape the social and dining culture in those areas (City of Sydney 2021). Similarly, the City of Singapore has begun establishing ‘Parklets’ by converting on-street parking into temporary green spaces for residents and tourists to relax and linger in spaces for longer periods. Another more forward-looking example is the City of Barcelona, Spain, that has begun implementing a programme called ‘Superblocks’ where the streetscapes in certain neighbourhoods are redesigned to create larger, pedestrian-friendly blocks to reduce traffic-related congestion and pollution and to free up space for community and social projects (Love & Stevenson 2019).

While some communities and councils are looking towards a more inclusive, socially sustainable urban environment, there are still many regions of the world that are suffering from a lack of use due to changes in the commercial property market (Armstrong et al. 2021; Armstrong et al. 2023). Historically, traumatic events such as economic recessions have led to increased vacancy rates as businesses fail, resulting in underuse and vacancy. Typically, a recovering market or technological innovation will often alter building uses, resulting in the redesign and adaptation of commercial markets. The pandemic is the latest global event to trigger changes in building uses, albeit slowly and with a disproportionate effect on lower-grade commercial markets. Besides the previously mentioned public perception associated with a dying ground-level market, empty and underused buildings physically deteriorate at a faster rate than occupied ones (Sayce et al. 2022). With an ever-increasing need for urban sustainability, allowing for large commercial spaces to fall into disrepair through neglect and underuse should attract significant attention. The economic and environmental cost associated with destroying and rebuilding derelict properties is enormous and, with forethinking, could be avoided.

While the return-to-work movement is slowly increasing, the pandemic has forever changed the workplace. To achieve urban sustainability, commercial properties that are affected by vacancy and underuse should look to redesign their spaces to revitalise the local community and attract new commercial leases. One idea that is gaining traction is the conversion of commercial spaces to social spaces that provide benefits to the local community or building tenants that have remained in the spaces. To address this, we have developed the Sustainable Temporary Adaptive Reuse (STAR) Toolkit concept.

### **Occupying Vacancy; Understanding the Voids to Evaluate STAR Options**

Vacancy in commercial buildings has become a global concern since the COVID pandemic due to a myriad of societal and technological changes. Before this, vacancy was connected to economic downturns, localised issues connected to supply and demand imbalances, or issues such as land banking and managed decline of existing buildings (Abramson 2015).

For commercial buildings, adaptive reuse is believed to be a solution to both resolving vacancy and addressing shortages in other types of buildings such as

affordable housing. Certainly, there has been significant uptake in office-to-residential conversions in cities such as London, when residential is seen as the ‘highest and best’ use (Clifford et al. 2019). Tools are in development for rapid evaluations of the suitability of buildings for office-to-residential conversion, when office buildings have become stranded assets (Beaney et al., 2023).

Since the pandemic, the focus on adaptive reuse as a solution to the vacancy is suggested by research and in practice (Armstrong et al. 2023; Hassell 2023; Roberts & Carter 2023; Lynch 2022). In real estate, calls for policy action to address vacant space have increased sharply, particularly for commercial buildings (Poleg 2023; Capps 2023; Hassell 2023). In research, however, adaptive reuse literature is limited in its discussion of vacancy. A review of the literature found vacancy is often used to describe a building’s end state, with little critical discussion of what vacancy looks like before a building is wholly vacant (Armstrong et al. 2023).

Vacancy understanding and metrics are useful for policymaking and strategic planning (Burkholder 2012). Further questions can be asked which highlight the need to develop our understanding of vacancy so that appropriate solutions can be effectively supported by policy action. These questions are:

- 1 Are whole office buildings close to standing empty, or are buildings suffering underoccupancy? If the latter is the case, whole building adaptive reuse may not be a viable option for buildings which have tenants on long leases.
- 2 Which buildings have ‘problematic’ vacancy? Where is the vacancy located? And what is ‘problematic vacancy’? For older office towers, building owners may have little or no outstanding debts and therefore may not be financially problematic. For newer buildings, there is an unwillingness to consider adaptive reuse as these buildings may be premium-grade office buildings, yet they may have high vacancy levels. In these cases, adaptive reuse policy may be ineffective at increasing uptake of adaptive reuse.
- 3 How long do we expect to see the drivers of vacancy remaining? In times of unprecedented and unforeseen societal change and flux, longer-term vacancy rates can be hard to predict.

These questions highlight the need for a more nuanced understanding of vacancy. Currently, the evidence presented to understand vacancy is typically simplistic average vacancy rates, aggregated across the whole city. There is a lack of nuanced debate which includes different types of vacancy, and the distribution of vacancy types in different buildings to inform effective policymaking (Armstrong et al. 2020).

In research, scholars are unpacking vacancy and provide a taxonomy for existing buildings including residential (Caramaschi & Coppola 2023) and commercial buildings (Muldoon-Smith & Greenhalgh 2017). These taxonomies highlight vacancy types such as:

- Structural, meaning the vacancy will not be resolved if the building’s use or condition is not adapted (Muldoon-Smith & Greenhalgh 2017).

- Dysfunctional vacancy occurs when governance is restricting changes in the building which would increase demand (Caramaschi & Coppola 2023). A driver of dysfunctional vacancy could be when a local government is not wishing to permit adaptive reuse to residential in a commercial zone.
- Churn, meaning vacancy that is the result of tenants moving to buildings of better grades in the same city (Muldoon-Smith & Greenhalgh 2017).
- Greyspace is understood as underoccupation, for example, a space which is currently leased but not needed by the current tenants (Muldoon-Smith & Greenhalgh 2017).
- Strategic vacancy occurs when buildings are purposefully left empty awaiting site redevelopment and approvals for demolition (Muldoon-Smith & Greenhalgh 2017).
- Inefficient vacancy occurs when a building is functional but does not perform well (Muldoon-Smith & Greenhalgh 2017).
- Inertial vacancy is when building owners are not taking steps to resolve the unleased space, following a ‘wait and see’ approach (Muldoon-Smith & Greenhalgh 2017).
- Unhabitable vacancy, meaning a building is not fit for use (Caramaschi & Coppola 2023). An example of this is where contamination has occurred, although the building itself is structurally sound.

Vacancy is believed to change according to the building grade it sits within, with ‘healthy’ vacancy sitting in higher-grade buildings and ‘unhealthy’ or stagnating vacancy existing in lower-grade buildings. However, a recent study challenges this, suggesting vacancy can be caused by the building design failing to meet the needs of businesses seeking office space (Armstrong 2020). For example, if a city’s businesses are small to medium enterprises, the demand for very large floor plates will be low and structural vacancy can occur even in new, high-performing buildings considered to be premium buildings.

Not all vacancy is seen as negative: for instance, too little vacancy can create other problems such as undersupply and high rents stifling diversity in the types of businesses and tenants that can afford to use the buildings in any given location. Initial, frictional, and cyclical are types of natural vacancy, and resolve themselves easily. These vacancy types are a sign of a healthy, balanced market and economy, depending on the time it takes for their resolution (Muldoon-Smith & Greenhalgh 2017).

These emerging taxonomies of vacancy are useful as they offer opportunities for developing and evaluating solutions for sustainable asset management to fit localised market conditions. However, the taxonomies must be coupled with access to transparent unaggregated vacancy data to enable greater understanding (Armstrong et al. 2021).

Sustainable asset management options include refurbishment and retrofitting to upgrade the building’s amenities for its current use and/or upgrade its aesthetics to reposition buildings in the market. Aside from retrofitting and refurbishment, there are several options available for adaptive reuse, which is where the building is adapted for a new use that is different from its current use. These different types of adaptive reuse are discussed in what follows next.

## Proposed Applications of STAR

Sustainable Temporary Adaptive Reuse (STAR) is a type of adaptation also known as ‘meanwhile use’. STAR is the process during which a part or whole of an existing building undergoes a change-of-use classification on a temporary basis. At the end of the time period, the spaces revert back to their former use. STAR can bring benefits to aid the longevity of the lifecycle of the building through active use whilst limiting the environmental impact of real estate practices and construction works, enabling temporary new use(s).

Buildings are classified according to their main use and can contain different uses. In Australia, uses are defined by the Australian Building Codes Board’s (ABCB) list ([www.abcb.gov.au/sites/default/files/resources/2022/UTNCC-Building-classifications.PDF](http://www.abcb.gov.au/sites/default/files/resources/2022/UTNCC-Building-classifications.PDF)). There are ten different classes that define building use and a further two classes for mixed-use and multiple-use buildings. Office buildings are Class 5, and retail uses are Class 6 buildings. Mixed-use is for buildings that may have a basement car park (Class 7a) with ground-floor retail space (Class 6) and residential apartments on levels one to eight (Class 2) and offices above level eight (Class 5). Buildings that have multiple classifications are designed for speculative development and can be designed to comply with regulations of multiple classes, for example, Classes 5, 6, and 7. For a STAR development, the ‘new’ use in part of the building differs from the existing use.

As mentioned previously, most adaptive reuse case studies and discussion focus on whole-building reuse. However, this is a limited view of reuse that can be developed to form new types of adaptive reuse. The partial building basis speaks to mixed-use building typologies or can transition buildings to multiple classifications, depending on the scale of the building and its proposed new uses.

STAR’s additional value, on a partial building basis, can increase demand for a building’s space and prolong a building’s usefulness. For buildings that are reasonably well-performing, partial adaptive reuse can add new temporary or trial uses to add additional value to buildings, making them attractive to both retain existing tenants and attract new tenants looking to upgrade their accommodation from low-grade buildings at the end of their lives. It can be a solution to resolving pockets of underuse, long before vacancy reaches terminal levels, and the assets are at increased risk of becoming stranded, or prematurely obsolete. For premium buildings, the additional value creation via STAR can offer premium tenants looking to encourage knowledge workers back from working from home. This is particularly likely if the social value of the new use is considered. STAR can offer increased opportunities for knowledge workers to connect, or it can deliver new uses which provide greater convenience or essential services to those who find working from home offers other advantages. New uses can also increase diversity and factor in workers’ life balance and wider needs. For example, services to help workers meet their caring responsibilities for children, aged parents, or even beloved pets.

The temporary nature of STAR provides an alternative to any inertial vacancy by which owners and managers ‘wait and see’ before investing in more radical or costly actions, particularly in markets with sudden or uncertain demand changes.

STAR can also be useful for ‘trial’ uses, where the idea is novel or market demand for other uses is uncertain. The key to viable temporary uses is a compatibility between the new use and the existing physical attributes of the space, the new users’ needs, and the needs of the existing users of the adjacent spaces or buildings.

The question to be asked is: What does ‘temporary’ mean? Over time, all buildings are temporary as they are demolished at the end of their structural life. Older heritage buildings have often undergone multiple changes of use. For example, the Pantheon in Rome (circa 126 AD) has been a temple, a marketplace, a legal centre, and currently a tourist attraction. However, for STAR the key to defining what is ‘temporary’ is the length of the leases typically offered for the building’s existing uses. Since the pandemic, the average lease length for office and retail space have fallen and can be as short as 1–2 years. What is temporary is a dynamic length of time that can be lengthened or shortened depending on the market. At the time of writing, temporary in office buildings can be as short as 1 day to 1–2 years and we are defining STAR are a time period shorter than the typical lease for a building.

A key aspect to STAR in office buildings is factoring in the social value of the new use so that spaces attract flows of people and the new use is regenerative. Flows of people can create vibrancy and can also generate flow-on associated economic activities, such as workers buying lunches and other goods and services. This social value can be quantified and measured through increased visitation and revenue in nearby spaces and businesses. The vibrancy or connections that STAR can offer can also create a sense of belonging for existing tenants. The social value of STAR can also be applied to the wider community. If spaces are converted for use by social enterprises, the social value can be calculated in terms of social impact. For example, offering space to a social enterprise can align with the sustainability (environmental or social) values of the owners of a building, or their tenants.

### **Increasing Importance of ‘Social’ in ESG**

The Environmental, Social, and Governance (ESG) framework has placed a lot of emphasis on the ‘social’ aspect in recent years. This is due to its significant impact on the sustainability of businesses, stakeholder relationships, and overall corporate responsibility. As companies face mounting scrutiny from investors, regulators, and the public, the social dimension of ESG has become a critical factor in evaluating a company’s long-term viability and ethical standing (Mah 2021). ESG is a comprehensive framework that assesses the sustainability and ethical practices of companies and organisations. It has become increasingly popular among investors, stakeholders, and consumers who prioritise responsible and ethical business practices (Cloutier 2020; Robinson & McIntosh 2022). ESG criteria provide a structured way to evaluate a company’s impact and performance beyond traditional financial metrics, aiming to capture a holistic view of their contributions to society, the environment, and corporate governance. As a result, ESG criteria have gained significant traction as a framework for evaluating the sustainability and ethical practices of companies and investment portfolios (Cloutier 2020).



The corporate responsibility landscape has undergone a paradigm shift with the emergence of the social dimension (Mah 2021). This encompasses a variety of issues such as labour practices, human rights, diversity and inclusion, community engagement, and supply chain ethics, among other social value elements. Companies are no longer solely accountable for their financial performance, but also for their societal impact. This has prompted a reassessment of business strategies and practices through an ethical lens. While all three components – environmental, social, and governance – are important, the Social aspect has taken centre stage in discussions and assessments (Wilkinson 2022; Mah 2021). It reflects a company's impact on society, its treatment of employees, customers, and communities, and its commitment to ethical and equitable practices. The emphasis on social within ESG has grown as stakeholders and investors recognise the significant influence companies have over society. This highlights its importance in shaping sustainable business practices and promoting positive societal outcomes.

When evaluating a company's performance, the ESG framework looks at three main areas: environmental, social, and governance. The environmental aspect focuses on how the company impacts the environment through carbon emissions, energy efficiency, waste management, water conservation, and sustainable sourcing. The goal is to reduce risk and promote sustainability. The social component examines how the company interacts with stakeholders such as employees, communities, customers, and suppliers. It considers factors such as labour practices, human rights, employee wellbeing, diversity, and community engagement. Finally, the governance aspect assesses the quality and transparency of the company's corporate governance practices, including board composition, executive compensation, shareholder rights, risk management, and ethical decision-making. Effective governance promotes accountability, prevents conflicts of interest, and ensures fair and responsible management practices. Companies are increasingly evaluated not just on financial performance but on their commitment to fostering positive social impacts and addressing social challenges (Mah 2021).

Many stakeholders are taking note of the ethical implications of their actions and demand greater accountability from companies (Cloutier 2021; Wilkinson, 2022). Consumers, investors, and jobseekers are all increasingly influenced by a company's social track record, which is causing businesses to prioritise socially responsible practices. Organisations are realising that ignoring social issues can lead to reputational damage, legal trouble, and operational disruptions down the line. The social dimension provides a framework for identifying and mitigating these risks by fostering a culture of ethical behaviour and responsible business practices. Governments and regulatory bodies may start paying more attention to social issues and enforcing laws and regulations related to things such as labour standards, human rights, and community engagement (Cloutier 2021). Complying with these regulations will be vital to maintaining a company's social responsibilities. Institutional investors and asset managers are also considering ESG factors when making investment decisions. The social dimension, particularly in terms of employee wellbeing, fair labour practices, and diversity, has been linked to improved financial performance and long-term sustainability, which is attracting investor interest.

Organisations that prioritise social sustainability tend to create stronger connections with their employees, customers, and communities (Cloutier 2021). These positive relationships can lead to a better reputation, customer loyalty, and long-term value. Environmental, social, and governance criteria are now used as a framework to evaluate the sustainability and ethical performance of businesses and investment opportunities. While the ‘E’ and ‘G’ components of ESG have been the focus of corporate responsibility discussions for a while, the importance of the ‘S’ – the social dimension – is gaining prominence. The increasing significance of the social aspect in ESG reflects the acknowledgment that the way organisations treat their employees, customers, communities, and other stakeholders has a substantial impact on value creation, reputation, and overall sustainability (Mah 2021; Wilkinson 2022).

The importance of the social aspect in ESG is increasing due to changing expectations from stakeholders, especially investors and consumers. Investors now seek companies with strong ethical values, transparency, and a commitment to addressing social issues, instead of just financial returns. This shift in investor behaviour has led to a surge in sustainable investment products, and companies are improving their social performance to attract investment. Consumers are also becoming more conscious of the social impacts of their purchasing decisions and demand products and services from companies that align with their values (Mah 2021; Wilkinson 2022). This demand for ethical products and responsible business practices has pushed companies to prioritise social considerations and adopt sustainable and inclusive practices. Additionally, employee engagement and talent retention contribute to the social aspect in ESG. Companies that prioritise employee wellbeing, diversity, and a safe working environment enhance their reputation and foster a motivated and loyal workforce (Mah 2021). Potential employees are now drawn to companies that prioritise social responsibility, creating a positive feedback loop that attracts and retains top talent in today’s competitive job market.

In addition, recent regulatory and legal changes have emphasised the significance of the social component in ESG. Governments worldwide are implementing more stringent regulations to tackle issues like workplace safety, modern slavery, and human rights violations. Companies that fail to comply with these regulations face not only financial penalties but also damage to their reputation. Thus, it’s essential for businesses to abide by social norms and legal requirements. It’s worth noting that the social element of ESG isn’t just about mitigating risks; it also offers significant potential for innovation and value creation. Companies that welcome diversity and inclusion, for instance, can benefit from a wider range of perspectives that can lead to better decision-making and product development (Mah 2021). By engaging with local communities, businesses can form strong partnerships that enhance their brand reputation and customer loyalty. The significance of the social dimension in ESG has been growing due to the evolving environment of business and society. Stakeholders now expect companies to be more accountable, transparent, and responsible. Hence, organisations are realising that their social performance directly affects their long-term success and are integrating social aspects into their strategic plans and operations. The changing role of the social component in ESG

highlights the interconnectedness of social, environmental, and governance factors, thereby creating a more sustainable and morally grounded business landscape.

### **The Compliance and Certification Conundrum**

Another important aspect to consider in STAR is the legal requirements in respect of building regulations and fire regulations. Buildings, when submitted for assessment, are allocated a code within the regulations, for example, office buildings are Class 5 buildings, whereas retail buildings are Class 6. This classification is important as it establishes the criteria under which the building will be assessed for code compliance.

Australian buildings, when designed and completed, are checked for compliance with the Building Code of Australia (BCA). The BCA is a set of technical provisions contained within the first two chapters of the National Construction Code (NCC). They dictate the minimum mandatory requirements for the health, safety, amenity, and sustainability in the design, development, and construction of new buildings within Australia (Australian Building Codes Board 2017). Building certifiers/surveyors and fire engineers acting for building owners are required to propose designs and make recommendations for compliance. The proposed drawings are submitted for approval. Once construction is completed, the building is checked for compliance with the design and NCC and, if correct, will be certified as compliant and a certificate of occupation is granted.

Any subsequent alterations to the building, may or may not trigger different parts of the NCC. Some uses have higher levels of fire risk than others (Carroll 2009). For example, building uses involving people sleeping, such as hotels or housing, have higher levels of fire protection as a fire may occur at a time when people are sleeping. The occupants would need longer to wake up and then evacuate the building. Likewise, some building uses have different requirements in respect of the distance to a fire escape staircase. Some building uses may have higher requirements in respect of toilet facilities than others. Other uses may pose higher risks in respect of fire and so on (Carroll 2009). The STAR Toolkit needs to identify and then assess the different options available for short-term uses for a Class 5 office building and the degree to which the proposed temporary use might trigger fire and NCC requirements. The rationale is that some new temporary uses would require minimal or no changes, whereas other uses would trigger extensive alterations to the building to meet compliance with fire and NCC standards. Extensive alterations are cost prohibitive and would not fit the STAR timeframe.

The issue of temporary use is somewhat of a challenge because the NCC does permit temporary uses, for example, with sporting or arts events, temporary structures such as tents accommodate catering outlets (Carroll 2009). The structures are erected for the event and then dismantled upon completion of the event. The standards in respect of fire differ to permanent structures with the same uses. With increasing vacancy within buildings, the question arises: *Can we apply the same approaches towards temporary uses within buildings?* Given the precedents of temporary structures for arts and sports events it appears possible (Armstrong

2020). The next question is then: *How long is a temporary period?* Our STAR workshop in 2022 concluded that in the Sydney market, the temporary use period would be 1 year or 12 months. The typical lease term in Sydney at the time was 2 to 3 years, and therefore a period of 1 year would be seen as temporary or short term.

The best way forward is to develop an NCC Checklist of critical issues to consider when proposing a STAR. This would ensure any critical fire or compliance issues are raised early in the evaluation of suitability. The stakeholders can then determine whether the proposal is legally, as well as technically, socially, and economically, viable or not. Note that this work is in progress.

## Conclusions

This chapter has set out a detailed analysis of the Sydney commercial property market, the shocks and stresses it has experienced since COVID, and how this has impacted occupancy and vacancy. Whilst the commercial market has recovered to some degree since mandatory lockdowns, it would appear that the experience from mid-2020 to mid-2022 has caused many of the CBD workforce to seek a more flexible work-life balance. Sydney is not alone as cities globally adjust to post-COVID social and economic patterns.

These changes have led to the concept of the STAR Toolkit and how this set of resources might address short-term vacancy and a lack of occupancy in the CBD. Headline vacancy in Sydney CBD is between 10% and 11% but occupancy rates are far lower than before COVID (anecdotally between 60% and 70%) meaning there is a lot of commercial space unoccupied on any given day. Further, current work patterns seem to indicate a preference for working from home on Mondays and Fridays which provides for greater levels of unoccupied space during these times. Given the changes to work patterns and practices and subsequent uses of buildings, which are new to many owners, regulators, occupiers, there is much uncertainty about where things are trending.

The market needs to better understand which buildings, market sectors, or time periods are experiencing ‘problematic’ vacancy, where is the vacancy located, and what is ‘problematic vacancy’? The STAR toolkit will assist owners, occupiers, and the wider market in understanding these issues. It may be the case that issues relating to vacancy and underoccupancy are different between differing building grades and sub-precincts. STAR aims to explore these issues and open the conversation on using existing building stock more intensively.

The issue of Environmental, Social, and Governance (ESG) and its growing importance in commercial property was discussed along with the potential to incorporate and measure this in STAR. The chapter concluded with a review of some of the legal and regulatory compliance issues which might impact on STAR potential. As a result of these issues and STAR workshops, we established the need for stakeholder guidance and the STAR Toolkit. It is envisaged that this toolkit will be beneficial to building owners in a market where owners are trying to differentiate themselves from the competition and where occupiers are looking to ESG-related ratings and gradings in their decision-making to occupy space.

Not only is there an environmental benefit from utilising existing structures rather than building new ones, a well occupied and vibrant building will likely be more attractive to existing tenants, particularly ground-level retail and cafe tenants who rely on footfall. This is amplified if temporary uses are complimentary to existing tenants' uses elsewhere in the building.

STAR will bridge a gap between landlords and tenants, introducing shorter-term occupiers to owners in uncertain market conditions where owners may be unable or unwilling to commit to longer-term more traditional lease structures. This chapter has also discussed the ability of shorter-term occupiers to extend the useful life span of a building that might be approaching obsolescence.

### Practical Implications

The following practical considerations have been established in this research to date:

- Provision of resources for stakeholders will facilitate the use of underused and vacant city centre buildings.
- The STAR Toolkit will assist owners, occupiers, and the wider market in understanding issues surrounding vacancy and underuse.
- The social aspect of Environmental, Social, and Governance (ESG) and its growing importance in commercial property is impacting the market and may enable new users to occupy spaces previously unavailable to them.
- STAR is one solution as the market transitions from a traditional 5-day working week in office buildings to a new mode.

### References

- Abramson, D.M. (2015). Architectures of obsolescence: lessons for History. In: *Cultures of Obsolescence: History, Materiality, and the Digital age*, pp. 61–75. New York: Palgrave Macmillan US.
- Armstrong, G., Wilkinson, S., & Cilliers, E.J. (2023). A framework for sustainable adaptive reuse: understanding vacancy and underuse in existing urban buildings. *Frontiers in Sustainable Cities* 5: 29.
- Armstrong, G., Soebarto, V., & Zuo, J. (2021). Vacancy Visual Analytics Method: Evaluating adaptive reuse as an urban regeneration strategy through understanding vacancy. *Cities* 115: 103220.
- Armstrong, G. (2020). *The Adaptive Reuse Predicament: An Investigation into Whether Building Regulation Is a Key Barrier to Adaptive Reuse of Vacant Office Buildings*. Dissertation, University of Adelaide. <https://hdl.handle.net/2440/129492>.
- Australian Building Codes Board (ABCB). (2017). *NCC 2019 Energy Efficiency Provisions: Rational and Scope*. ABCB.
- Beaney, A., Przydrozna, A., O'Donnell, R., & Addis-Elyassir, O. (2023). A multidisciplinary approach to decarbonisation pathways for commercial stranded assets in the UK. *Corporate Real Estate Journal* 12(4): 351–364.
- Burkholder, S. (2012). The new ecology of vacancy: Rethinking land use in shrinking cities. *Sustainability* 4(6): 1154–1172.

- Capps, K. (2023, October 27) A New White House Plan to Create Affordable Housing: Convert Empty Office Buildings. *Bloomberg*. Accessed 27 October 2023. Available at: [www.bloomberg.com/news/articles/2023-10-27/to-speed-office-conversions-to-housing-biden-unlocks-funding-resources](http://www.bloomberg.com/news/articles/2023-10-27/to-speed-office-conversions-to-housing-biden-unlocks-funding-resources)
- Caramaschi, S., & Coppola, A. (2021). Post-disaster ruins: the old, the new and the temporary. In: *The New Urban Ruins*, pp. 125–144. Policy Press.
- Carroll, T. (2009). *Monitoring Building Regulations and Temporary Structure Fire Safety In Victoria, Australia*. Dissertation, Worcester Polytechnic Institute.
- City of Sydney (2021). Outdoor Dining Policy. Accessed September 2023. Available at: [www.cityofsydney.nsw.gov.au/policies/outdoor-dining-policy](http://www.cityofsydney.nsw.gov.au/policies/outdoor-dining-policy).
- Clifford, B., Ferm, J., Livingstone, N., & Canelas, P. (2019). Understanding Office-to-Residential Permitted Development. In: *Understanding the Impacts of Deregulation in Planning*. Cham: Palgrave Pivot. [https://doi.org/10.1007/978-3-030-12672-8\\_4](https://doi.org/10.1007/978-3-030-12672-8_4)
- Cloutier, D. (2020). The new norm: ESG as a material risk and opportunity for real estate. *CRE Real Estate Issues* 44(16): 1–7.
- Creswell, J.W. (2013). *Qualitative Inquiry and Research Design: Choosing among Five Approaches*. Sage Publications.
- Fiorentino, Stefania, et al. (2022). The future of the corporate office? Emerging trends in the post-Covid city. *Cambridge Journal of Regions, Economy and Society* 15(3): 597–614.
- Florida, R., Rodriguez-Pose, A., & Storper, A. (2021, June). Cities in a post-COVID world *Urban Studies*.
- Glaeser, E.L. (2022). Reflections on the post-Covid city. *Cambridge Journal of Regions, Economy and Society* 15(3): 747–755.
- Greenhalgh, P. (2020). High street prospects: Bounce back or recalibrate? A reflection on the prospect for UK high streets and town centres to find a new future in a post COVID-19 world. *The Terrier* 25(1): 75–77.
- Hassell (2023). Converting vacant CBD offices into apartments could create up to 12,000 Melbourne homes. Accessed 23 September 2023. Available at: [www.hassellstudio.com/news-event/converting-vacant-cbd-offices-into-apartments-could-create-up-to-12-000-melbourne-homes](http://www.hassellstudio.com/news-event/converting-vacant-cbd-offices-into-apartments-could-create-up-to-12-000-melbourne-homes)
- Love, P., & Stevenson, M. (2019). Superblocks are transforming Barcelona. They might work in Australian cities too. *The Conversation*. Accessed 1 September 2023. Available at: <https://theconversation.com/superblocks-are-transforming-barcelona-they-might-work-in-australian-cities-too-123354>
- Lynch, N. (2022). Remaking the obsolete: Critical geographies of contemporary adaptive reuse. *Geography Compass* 16(1): e12605.
- Mah, S.K. (2021). Earth, wind, and fire: Pace plays a vital esg role. *The Journal of Structured Finance* 26(4): 73–85.
- Marzban, Samin, et al. (2023). A review of research in activity-based working over the last ten years: Lessons for the post-COVID workplace. *Journal of Facilities Management* 21(3): 313–333.
- Muldoon-Smith, Kevin, & Greenhalgh, Paul (2017). Situations Vacant: A Conceptual Framework for Commercial Real Estate Vacancy 24th Annual European Real Estate Society (ERES) Conference. *Reviewed Papers*.
- Nanayakkara, Kusal, Wilkinson, Sara, & Halvitigala, Dulani (2023). *Activity Based Working and their impact on organisational culture – employees’ perspectives*. *Facilities*.
- Poleg, D. (2023). The next crisis will start with empty office buildings. *The Atlantic*. Accessed 23 October 2023 Available at: [www.theatlantic.com/ideas/archive/2023/06/commercial-real-estate-crisis-empty-offices/674310/](http://www.theatlantic.com/ideas/archive/2023/06/commercial-real-estate-crisis-empty-offices/674310/)
- Roberts, E., & Carlile Carter, H. (2023). Adaptive Reuse of Closed Malls for Dementia Programs and Services: Community Focus Group Feedback. In: *(Re) designing the Continuum of Care for Older Adults: The Future of Long-Term Care Settings* pp. 197–216. Cham: Springer International Publishing.

- Robinson, Spenser, & McIntosh, Michael G. (2022). A Literature Review of Environmental, Social, and Governance (ESG) in Commercial Real Estate. *Journal of Real Estate Literature* 30(1–2): 54–67.
- Sayce, Sarah, et al. (eds.) (2022). *Resilient Building Retrofits: Combating the Climate Crisis*. Taylor & Francis.
- Verma, Anju, et al. (2023). The future of work post Covid-19: key perceived HR implications of hybrid workplaces in India. *Journal of Management Development* 42(1): 13–28.
- Wilkinson, Sara. (2022). ESG easy as 123. *Built Environment Economist: Australia and New Zealand*: 34–37.