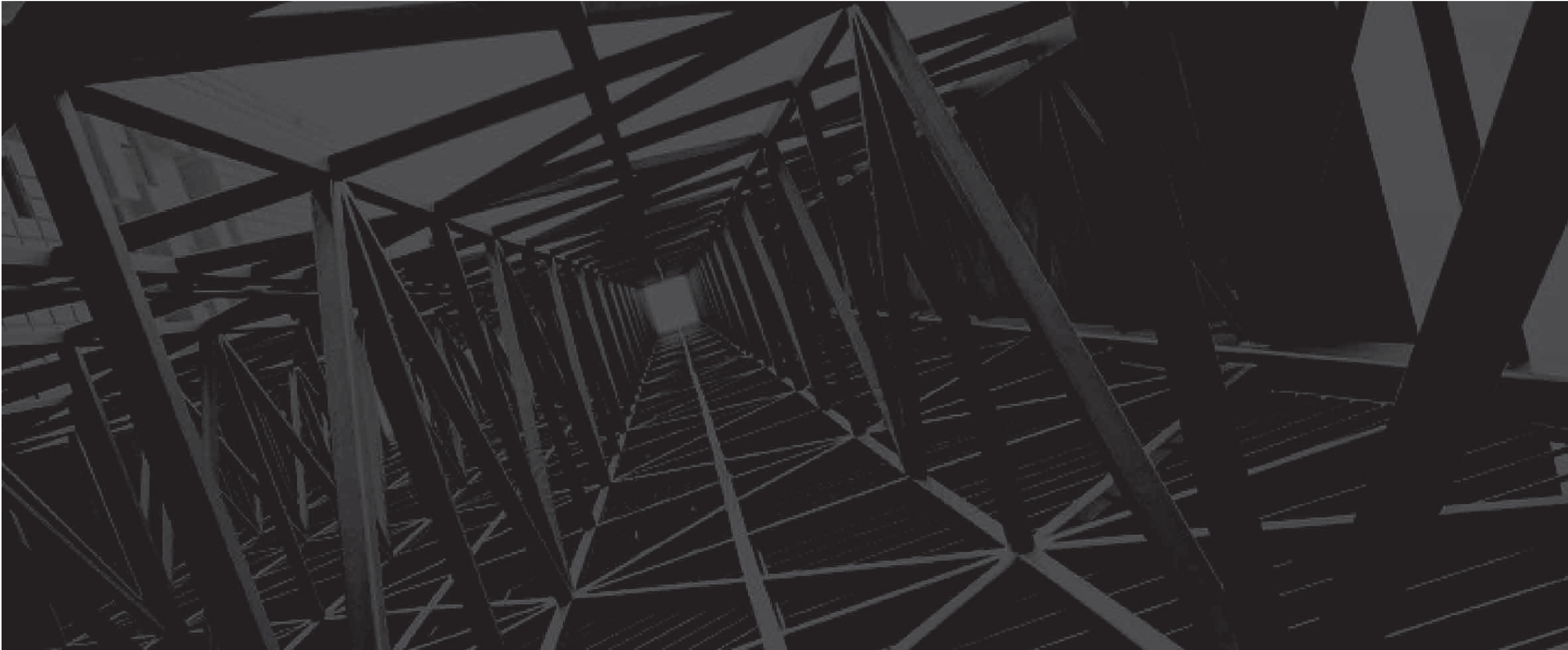


Vertical Expansions

WHITE PAPER



Why Vertical Expansion?

The question at the forefront of everyone’s mind is what the demand for office space will be after Covid-19.

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After 3 months in isolation working from home, the novelty of this newfound freedom has made even the most introverted of us realise that we want more from the office than just somewhere to work. We have all adapted very quickly to the remote collaboration, but it is not the same. We are social creatures and crave the interaction we get from the office environment.

There is much speculation, and how things will change remains to be seen. The only certain thing is that the commercial office space will change, and tenants will demand high quality resilient spaces.

Prior to Covid19 the Melbourne office market was in a strong position with record low vacancy rates.

"The Melbourne CBD office vacancy rate of 3.2 per cent is the lowest in the nation and at its record-low level. Almost 400,000 sqm of new supply will come to the market in 2020, the biggest annual increase in three decades for which almost 90 per cent is pre-committed."

PROPERTY COUNCIL OF AUSTRALIA
OFFICE MARKET REPORT

With 400,000 sqm relocating to new spaces, asset owners will be looking to back fill existing stock.

"Companies will now be well aware that they could make do with less office space. But they may also have realised that they also need better, more resilient office space. "This crisis is probably going to accelerate the need for modern, flexible office space with lots of services," says Meyer. "The buildings that will suffer will be the older ones that tenants just don't want any more. They're just the wrong product."

WSP

The majority of these buildings are going to require repositioning to meet tenant expectations. With more than 50% of the building requiring refurbishment they will need to be upgraded to comply with the current building code.

This creates a rare opportunity to review existing buildings that may be underdeveloped by current development standards and changed planning policies.

A vertical expansion undertaken during a building repositioning can increase the value of the existing asset and provide additional Net Lettable Area (NLA) to the owner without the cost of purchasing a site, creating a more desirable product, reducing risk of vacancy and potentially create new earnings.

The extent of impact of the pandemic on the economy remains to be seen, but we need to continue development activity, continue investment, and deploy capital to ensure growth. While people remain cautious of large long-term investment, a lower financial risk approach might be for owners to consider value adding to existing assets, including solutions such as building extensions.



Considerations

There are many considerations that contribute to the cost of a vertical expansion to an existing building asset. Understanding these will assist in understanding the feasibility of the project.

Every building has its own complexities, the balance between the value of space versus the cost of construction, be it monetary or otherwise, will determine the viability of a vertical extension to an existing asset.



Building Services

- Life cycle remaining of existing services
 - Do they require upgrade?
 - When were services upgraded?
- Compliance of building services to the current code.
- Redundancy/Excess capacity in existing systems.



Lifts

- Life cycle remaining of existing lifts.
- Review previous/planned upgrades.
- OPEX budget available for upgrade or replacement.
- Speed of existing lift motors.
- Tenant waiting times.
- Is the system conventional or destination control?
- Maximum potential of existing shaft.
- Potential space available for additional lift shaft.



Tenants

- Current building occupancy.
- Potential rent rebates for disruption during construction.
- Restrictions for noisy works, i.e. out of hours work.
- Vacant floor availability.
- Decanting tenants to vacant floor(s).
- Identified additional space requirements of existing tenants.



Planning Codes

- Changes to the planning codes since erection.
- Applicable planning restrictions.
- Is the site underdeveloped with respect to current code?
- Site setbacks.



Construction

- Site access.
- Fall protection.
- Site sheds.
- Transport for contractors. Alimak or use of building lifts.
- Tower crane.
- Prefabrication.
- Early Contractor Involvement (ECI).



Building Compliance

- An addition of 50% of the existing building volume triggers a whole building upgrade.
- Compliance of the existing building with current building code.
- Will any addition to the building height change the classification of the building and fire engineering requirements?
- Maintaining PCA classification. Bbuilding volume and NLA per floor.
- Height above 25m triggers the requirement for stair pressurisation.



Structure

- Availability of existing structural documentation.
- Requirement for invasive or destructive testing.
- Geotechnical results.
- Compliance to current earthquake codes. Lateral and seismic loads.
- Capacity of columns.
- Capacity of foundations.
- Structure of the existing roof, i.e. concrete or steel framed.

"CONCRETE IS A MATERIAL THAT GETS STRONGER OVER TIME AND WHAT WE ARE FINDING IS THAT THESE [OLDER CONCRETE] BUILDINGS ARE INCREASING THEIR STRUCTURAL CAPACITY OVER TIME."

MARC COLELLA – AECOM

The following pages show two project examples undertaken by Gray Puksand of different complexities and what considerations were relevant to allow these projects to proceed.

Case Study 01

OWEN DIXON CHAMBERS WEST (ODCW)

ADDRESS	525 Lonsdale Street
STATUS	Construction Completed 2014
EXISTING	18 Floors Approx 18,500sqm NLA
ADDITION	4,5 Floors 4,424sqm NLA
RATING	PCA A Grade

BRIEF

The building owners Barristers Chambers Limited (BCL) are a premium supplier of Barristers Chamber across 7 buildings in Melbourne CBD. BCL owns 3 of the chamber buildings and leases space in the remaining 4.

The purpose of the initial feasibility for BCL was to investigate the potential to provide more area within their existing asset. The extension allowed them to consolidate Chambers into a BCL owned building, eliminating the need to lease space.

"Maximise the additional area within existing structural capacity, allowing the building to remain occupied without the additional disruption of structural upgrade."

OUTCOME

ODCW whilst complex in an occupied space was an ideal candidate for a vertical extension. Existing structural capacity combined with services at the end of their operational life allowed additional NLA to be added to the building with minimal disruption allowing the building to remain in full occupation during construction.

Lifts

The lifts required an upgrade, the combination of faster lifts and a new destination control meant that the existing lifts could be extended and be sufficient to service the whole building.

The high rise lift shaft was extended with precast concrete and a new motor room built. New high speed motors were installed.

One at a time the lid of the existing lift shafts was removed, and the rails extended to the new motor room. This allowed the other 3 lifts to remain in operation for tenants.

Building Compliance

With no upgrade to the existing floors the extension at less than 50% of the existing footprint did not trigger full building upgrade requirements. Only the extension was required to meet the current building code.

Additional floors were maintained above 1000sqm maintaining the PCA A Grade rating.

Planning Code

Within the Capital City Zone, there were no planning regulations identified to prohibit an extension to the existing building.

Structure

ODCW provided the ideal structural situation for vertical expansion, in that it did not require strengthening of existing footings or columns. The extent of expansion was designed to the maximum available without upgrade. Two traditional concrete floors or 4 lightweight floors. Steel framing and a Hebel plank system were utilised.

Building Services

Building services were reaching the end of their operational life. This provided the opportunity to provide new equipment while the existing equipment remained in operation.

We were able to maintain the existing roof as a plant room and build the new floors above.

Once the new roof and plant room was complete we were able to switch to the new plant, with the planned minimal downtime. The redundant equipment was then removed.

Construction

Restricted site access.

A multilevel gantry was installed to the rear of the building to hold contractor sheds.

The east wall of the façade has a solid wall which allowed an alimak to be installed to transport equipment and trades without the use of the internal passenger lifts.

Steel framing and Hebal plank construction was utilised, allowing much to be manufactured off site.

Light construction can not be loaded during construction making the project crane reliant for installation of the curtain wall.

Tenants

The building remained in occupation with 500+ barristers during the entire period of construction.

Communications to the tenants was paramount, correspondence identifying any disruptions were issued fortnightly Most structural borne noise was undertaken outside of normal business hours.

Some noise disruption and reduced lift service.



Case Study 02

200 VICTORIA STREET

ADDRESS	200 Victoria Street
STATUS	Tender Complete (Asset Sold)
EXISTING	7 Floors + Plant 7,650sqm NLA
ADDITION	8 Floors 9,108sqm NLA
RATING	PCA A Grade and 6 Star Green Star

BRIEF

With the CUB site redevelopment nearby and rezoning of the area, the existing site had opportunity to develop further. With a 6 star greenstar building and full occupation the client did not want to pull the building down and start again.

"To maximise the potential built area available to the site."

The project included a ground floor lobby and retail tenancy upgrade and the addition of an end of trip facility.

OUTCOME

This site and its existing building having been extended previously was more complex than ODCW. It was established that any addition would require some structural upgrade. If you were going to create disruption, then why not maximise the potential yield to the site.

With the building mostly compliant with current code it was not necessary to allocate funds to upgrading the services, allowing available funds for the structural upgrades.

Whilst the intention was to undertake the works in an occupied space the structural works were more extensive than first thought and as such occupation was being negotiated.

The project was successfully tendered and negotiated then put on hold as the owner was approached to sell the building. The project is yet to proceed.

Lifts

The existing lifts did not have capacity to service the 8 new floors, even if the motors were upgraded.

The existing building had a central atrium, this provided the opportunity to run a new lift shaft within the atrium for 3 new lifts. The existing acting as low rise to the existing floors. The 3 new lifts highrise for the new floors.

Machine Roomless lifts the existing could remain in use during construction.

Building Compliance

With an addition of more than 50% of the building area, the building is required to be upgraded to meet current code. The existing building as 6 star greenstar, required minimal work to achieve compliance.

Additional floors were maintained above 1000sqm maintaining the PCA A Grade rating.

A Green lease agreement also meant that any extension must maintain the 6 star Green Star status

Planning Code

The site whilst in the Capital City Zone is subject to C196 with a subsequent preferred maximum height of 40m. Through negotiation with Council we were able to achieve approval for 64m in height by having the building setback at 40m and breaking up the mass of the façade.

Construction

A contractor was engaged during the design process to add their smarts to the team. The Early Contractor Involvement (ECI) phase assisted in understanding constructability in a complex project.

Restricted site access. Laneway behind the site was to have a gantry with site sheds. A gantry to the adjoining outdoor space was also required for overhead protection.

The crane was to be erected within the existing atrium and the lift shaft erected around it. Floors were to be bondek, light weight was not feasible here due to the large spans and bracing requirements to comply with current seismic codes.

Works to the ground floor were to be staged to allow access to existing lifts.

Building Services

When the existing building was extended in 2008 the existing building services were upgraded to achieve the 6 Star Green Star status. The existing services did not need to be replaced nor did they have capacity for more than doubling the area of the building.

The extension was run as a separate building with its own plant on the new roof. The roof plant of the existing building was to be maintained to run the original 7 levels. This provided the opportunity for the existing building services to remain in operation.

Structure

The existing building had been extended previously from a 2 storey building to the current 6 storey building. The 2008 addition required some footing upgrades as such the footings had some capacity however additional structure upgrade was required to allow an addition of 8 levels the maximum height available though planning.

The new structure was to act as a tabletop above the existing building, new columns ran to the outside of the building minimising work to the existing floors. Some column upgrade was required around the central atrium through all existing floors. This column upgrade would need to take place as enabling works to allow the additional floors.

New footings were required within the ground floor lobby. The structural design of the complete building needed to comply with current earthquake codes. Limited structural documentation of the existing building was available as such coring of existing footings was required to understand the concrete strength.

Tenants

The intent was to undertake the extension in an occupied space. There would be significant disruption to tenants, the enabling works were to take place out of hours to minimise disruption on the tenant floors.

There was concern about disruption and relocation or decanting was being discussed.

Findings

It is possible to increase the building yield of your site by providing a vertical expansion to an existing building, and as a result increase the value of an existing asset. Most buildings have the potential for Vertical Expansion, the question is how high and how much will it cost.

Both height and cost are contingent on the structural capacity of the existing building. If little to no structural upgrade is required, the prospect of a vertical expansion becomes reasonably easily achievable. If major structural upgrade is required, then the vertical expansion whilst still possible requires a more in-depth study to establish costs and therefore feasibility.

Vertical expansion in an occupied space is possible. Careful consideration of the building services to allow the building to remain in operation and minimise disruption needs to occur. Communication with building occupants regarding disruption is paramount to a successful delivery of an occupied space ensuring your existing tenants remain.

Early contractor engagement (ECI) can be beneficial in complex additions to assist in constructability and minimise programme and disruption to tenants and once a project is going to proceed investing in a 3D survey is invaluable, reducing risks once on site.

Undertaking a feasibility study is essential to tease out all of the unique considerations for your asset. Vertical extension is not a one size fits all approach but is a sustainable and achievable solution to the question. Do we need more space?



About the Author



Kelly is a dedicated Architect with over two decades of experience in designing and delivering large and complex projects both locally and internationally.

Achieving uncompromised levels of service and quality, Kelly is a methodical practitioner in managing architecture projects across a number of sectors.

Kelly has completed a number of feasibility studies on vertical expansion and was the lead architect for the design and delivery of Owen Dixon Chambers and design and documentation of 200 Victoria Street.

She utilises her excellent communication and analytical skills to diligently lead her teams to develop robust solutions within the built environment

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