

## CitA Digital Transformation Series

Transforming Modular Delivery



[www.studioanyo.com](http://www.studioanyo.com)

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# BENEFITS OF MODULAR CONSTRUCTION

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Off-site efficient eco-friendly, recyclable construction



Early cost certainty and reduced risk



Ability to produce full scale, working mock-ups for review



Construction materials delivered to & stored in the factory reducing risk of damage/loss

## MEP

Early integration of room M&E (pre-installed and commissioned in the factory)



Significantly shorter construction programme



Early occupation and return on capital investment



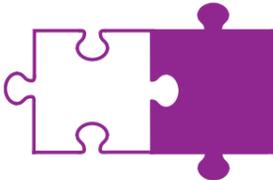
Low risk to client & contractor due to off-site manufacture ahead of site works



Health & safety issues are more easily addressed



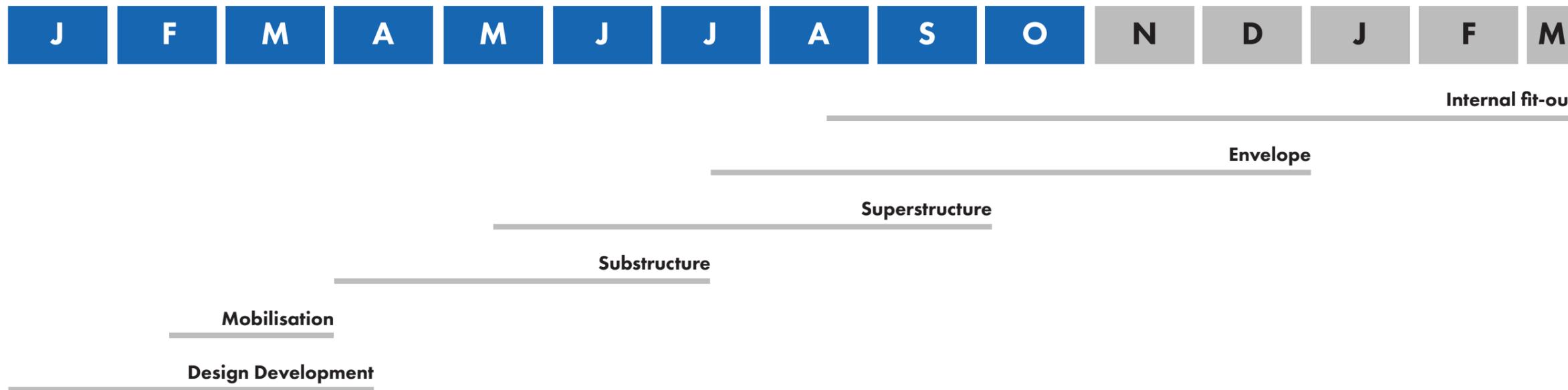
Light-weight construction potentially reduces foundation & podium costs



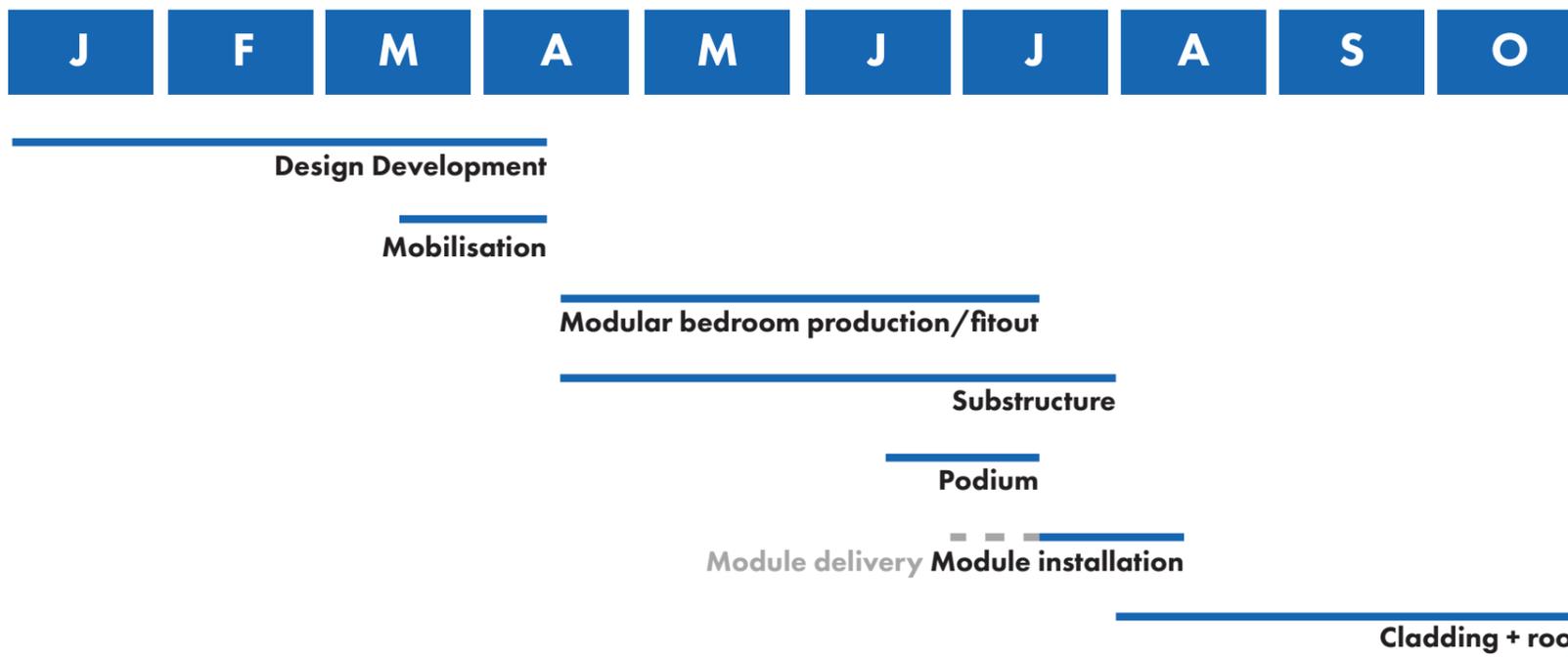
Ability to 'template' all designs and specifications for generic types of buildings



Local labour can be used for module fabrication and fit out



traditional  
**14.5 months**



modular  
**10 months**

## BENEFIT 01 PROGRAMME

- Because construction of modular buildings can occur simultaneously with the site and foundation work, projects can be completed 30% to 50% sooner than traditional construction.
- The key benefit to developers is the speed of construction - its creates 35-50% program saving, as the rooms are built while the foundations are constructed.
- This means reduced finance cost and early revenue return.
- This creates a higher cash flow in the early phase for the project, an early design freeze on the project design, and off site material payments.

## BENEFIT 02

### SUSTAINABILITY

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- Constructing offsite in a factory corresponds to a more efficient use of materials through a qualified supply chain that are then utilised optimally to create components assembled on-site to form enhanced levels of building fabric performance.
- Surplus material and fall-off can be captured and recycled back into the production of other projects.
- Worker travel and small material deliveries are drastically lowered with modular construction, also resulting in significantly reduced emissions from transportation.
- The operational energy of modular projects can be reduced through the improved and reliable thermal performance that can be gained through the off-site production of envelope components under controlled manufacturing conditions.
- Utilising a local labour force to add value to a localised supply chain for the production of a quality product efficiently is economically viable when executed appropriately.
- Less space is required around the building site for workers, truck traffic, and materials, resulting in a smaller construction footprint and reduced site disturbance.
- Less disruption to the local community



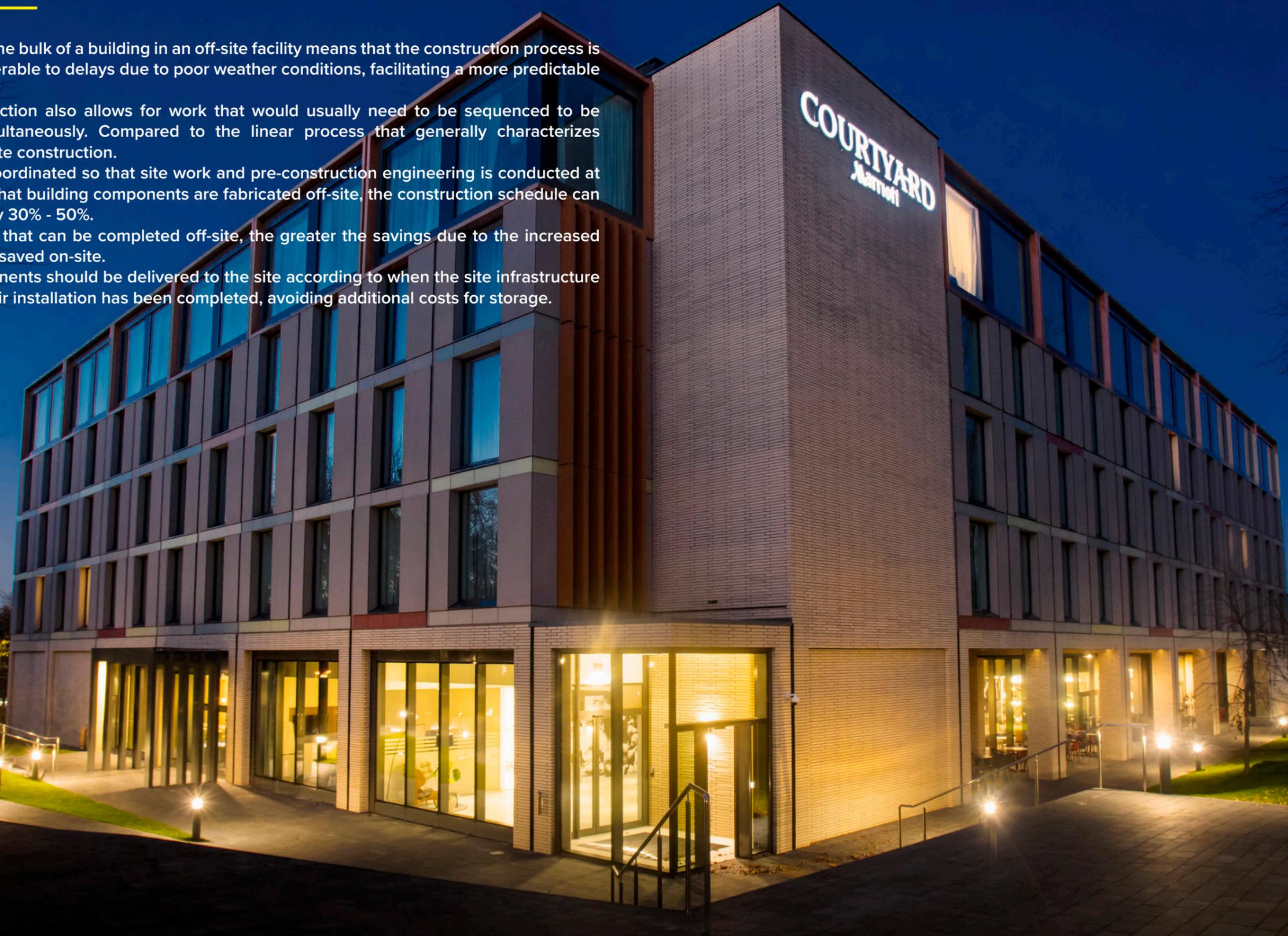


## BENEFIT 04

### SCHEDULE

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- Prefabricating the bulk of a building in an off-site facility means that the construction process is much less vulnerable to delays due to poor weather conditions, facilitating a more predictable schedule.
- Off-site construction also allows for work that would usually need to be sequenced to be performed simultaneously. Compared to the linear process that generally characterizes traditional on-site construction.
- If a project is coordinated so that site work and pre-construction engineering is conducted at the same time that building components are fabricated off-site, the construction schedule can be shortened by 30% - 50%.
- The more work that can be completed off-site, the greater the savings due to the increased amount of time saved on-site.
- Building components should be delivered to the site according to when the site infrastructure required for their installation has been completed, avoiding additional costs for storage.



## BENEFIT 05

### QUALITY

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- The monitored manufacturing setting, the use of precise fabrication tools such as CAD/CAM, and the ability to automate processes allow for a high level of quality control and consistency.
- This is especially beneficial when it comes to the installation of sensitive high-tech components such as fire and security systems or sensor-based environmental controls.
- The increased precision in fabrication of exterior wall components also results in a much tighter building envelope with higher levels of thermal and acoustic performance, and more predictable product behaviour.
- Mass production manufacturing processes can be used to achieve additional economies of scale. Project teams can work with fabricators to pursue a mass customization approach that captures the benefits of mass production economies of scale while allowing variability to suit a wide range of client requirements and design intents.
- Improved quality assurance results in reduced snagging and defects.
- The production and storage of building components in an enclosed facility results in reduced weather exposure, preventing moisture-related damage during construction, and decreasing the potential for mould growth that's harmful to the occupant's health.





## BENEFIT 06

### SAFETY

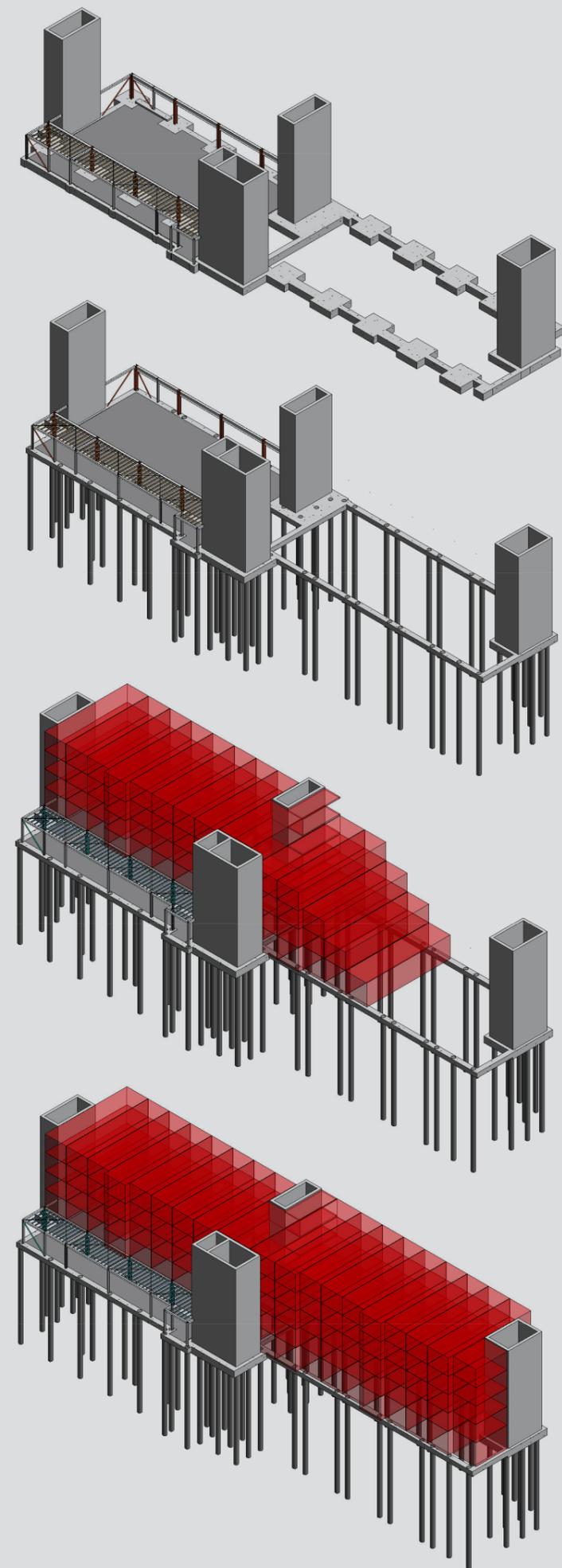
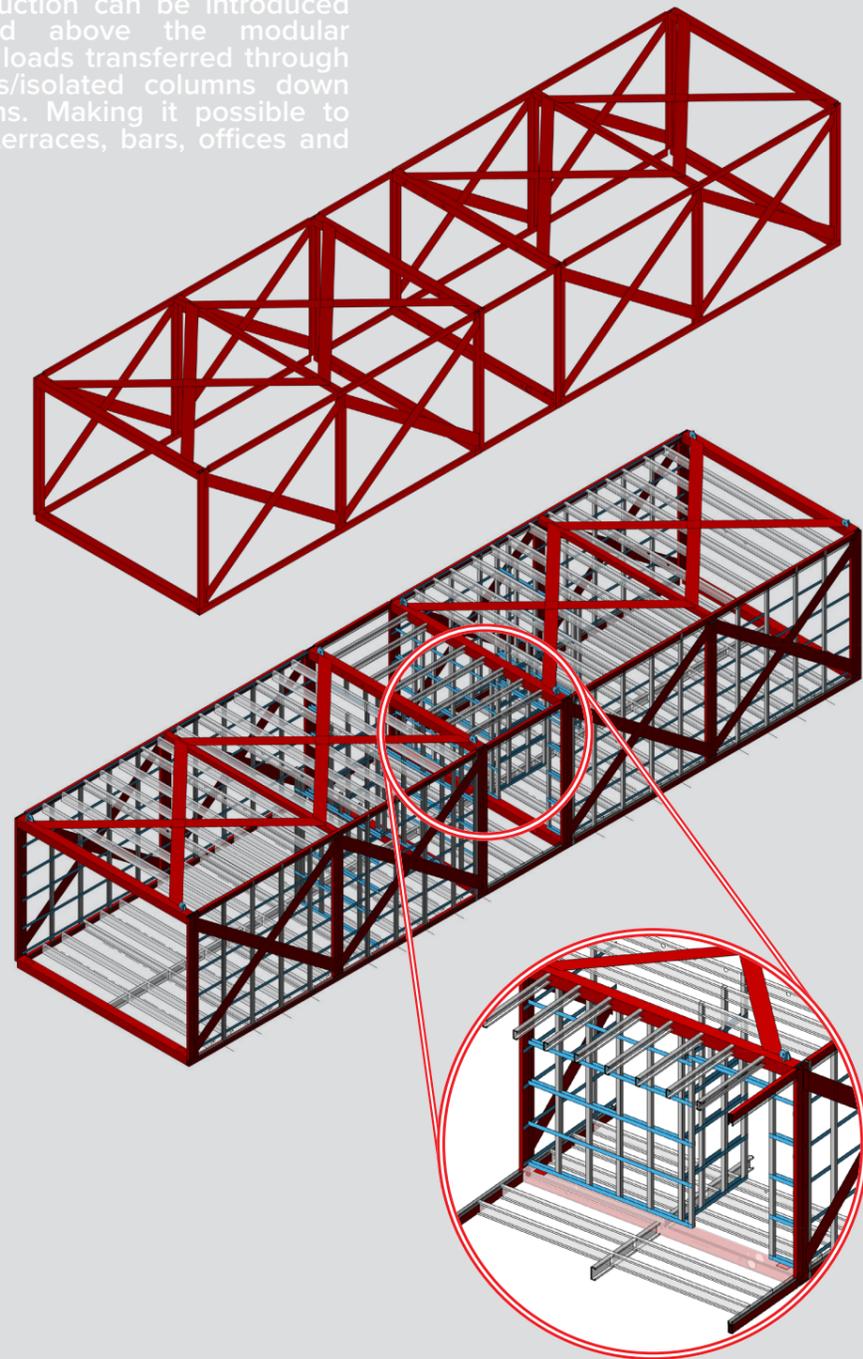
- An off-site construction approach is also generally safer for workers. Workers work in a controlled setting and are not exposed to the hazards of extreme weather and other construction site dangers such as those related to noise and air quality.
- The factory environment improves working conditions and offers a change in “construction culture” by providing a safe, clean place of work with improved job security and flexible shift patterns.
- Rates for fatal injuries are substantially lower in manufacturing than in traditional onsite construction.
- Moving construction work to off-site manufacturing facilities could improve the overall culture of construction work, for example, by providing greater job security and more flexible shifts for workers.

# STRUCTURAL DESIGN

- Modules can be designed with open sides so when placed adjacently, modules form larger spaces.
- 'Knock-out panels' can be designed into the module bearing walls so that smaller rooms can be expanded to suit changing requirements for spaces.
- Traditional construction can be introduced both below and above the modular components with loads transferred through the bearing walls/isolated columns down to the foundations. Making it possible to incorporate roof terraces, bars, offices and

plant rooms above and below the modules.

- Tolerances: Factory controlled fabrication enables complex interior fit outs to be mass produced, also allowing buildings with intricate façades to be constructed to a high degree of accuracy, through the pre-installation of facade glazing and cladding elements.

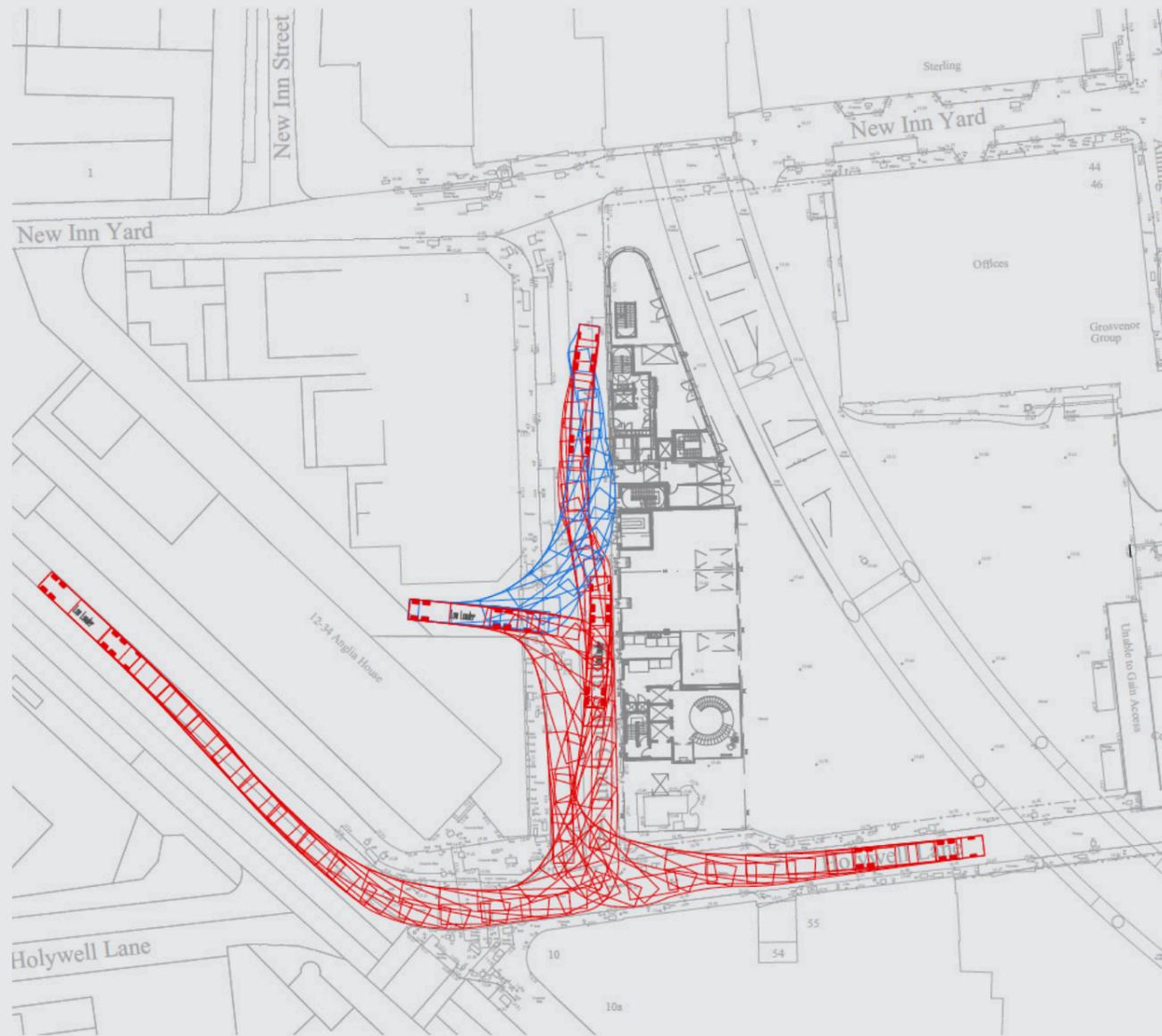


# FACTORY SYSTEM

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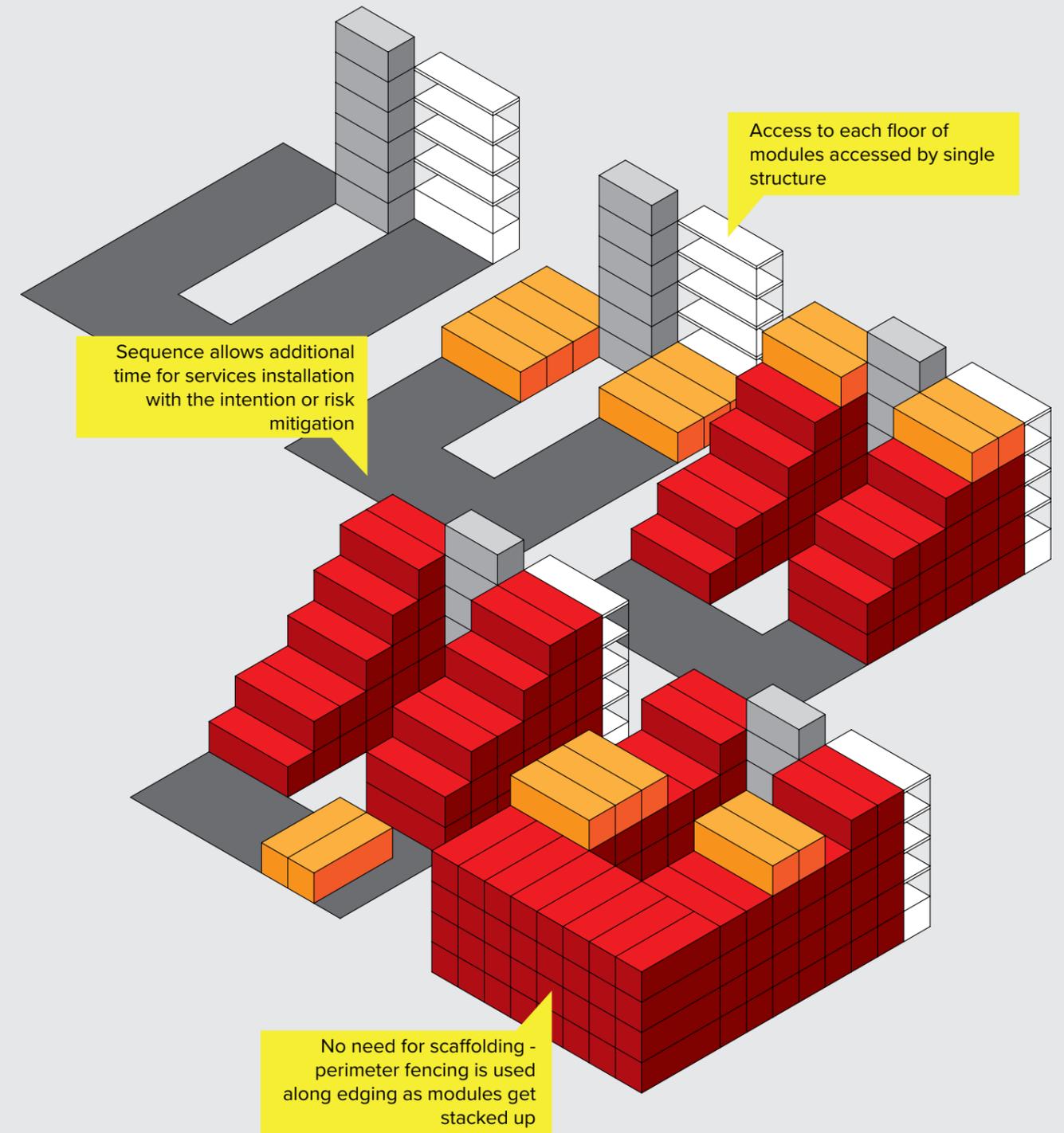
- Traditional on site installation of MEP services rely on a large number of trades all working in confined spaces, requiring complex project management, sequencing and intense programme input.
- Modular construction is an alternative solution which avoids these issues associated with this stage.
- Modular systems can deliver complete interior solutions for hotels, resorts, restaurants, apartments, and student accommodation, as well as supplying furniture for the retail market.
- Offers a realistic and affordable option to labour-intensive, time-consuming on site production and assembly.





## LOGISTICS

- Modular manufacturers are able to provide a full lifting service with a team who are full certified to design and deliver our projects.
- Our team of architects and design experts will advise on the optimum design solutions which will then be analysed by our logistic team to ensure smooth delivery.
- A local contractor will provide the crane and we will provide a RAMs and a lifting and stacking plan.



How To Design Modular

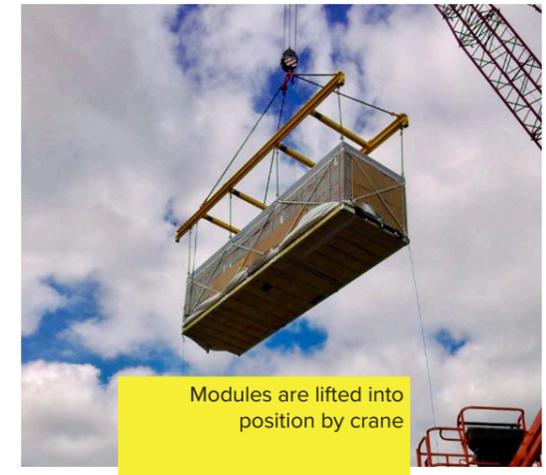
# MODULAR CONSTRUCTION SEQUENCES



Joints between modules are sealed



All modules are fully prepped with insulation, electrics & A/C units



Modules are lifted into position by crane



How To Design Modular  
**STORAGE + TRANSPORTATION / SURVEY + INSTALL SEQUENCE**



Modules are transported from factory to transporter lorry by steel frame bracing



MODDE

modular design & delivery

# ABOUT Mode

Mode is a solution provider whom has vertically integrated modular system design + AI with an onsite delivery capability modernising the construction industry, rethinking the whole system.

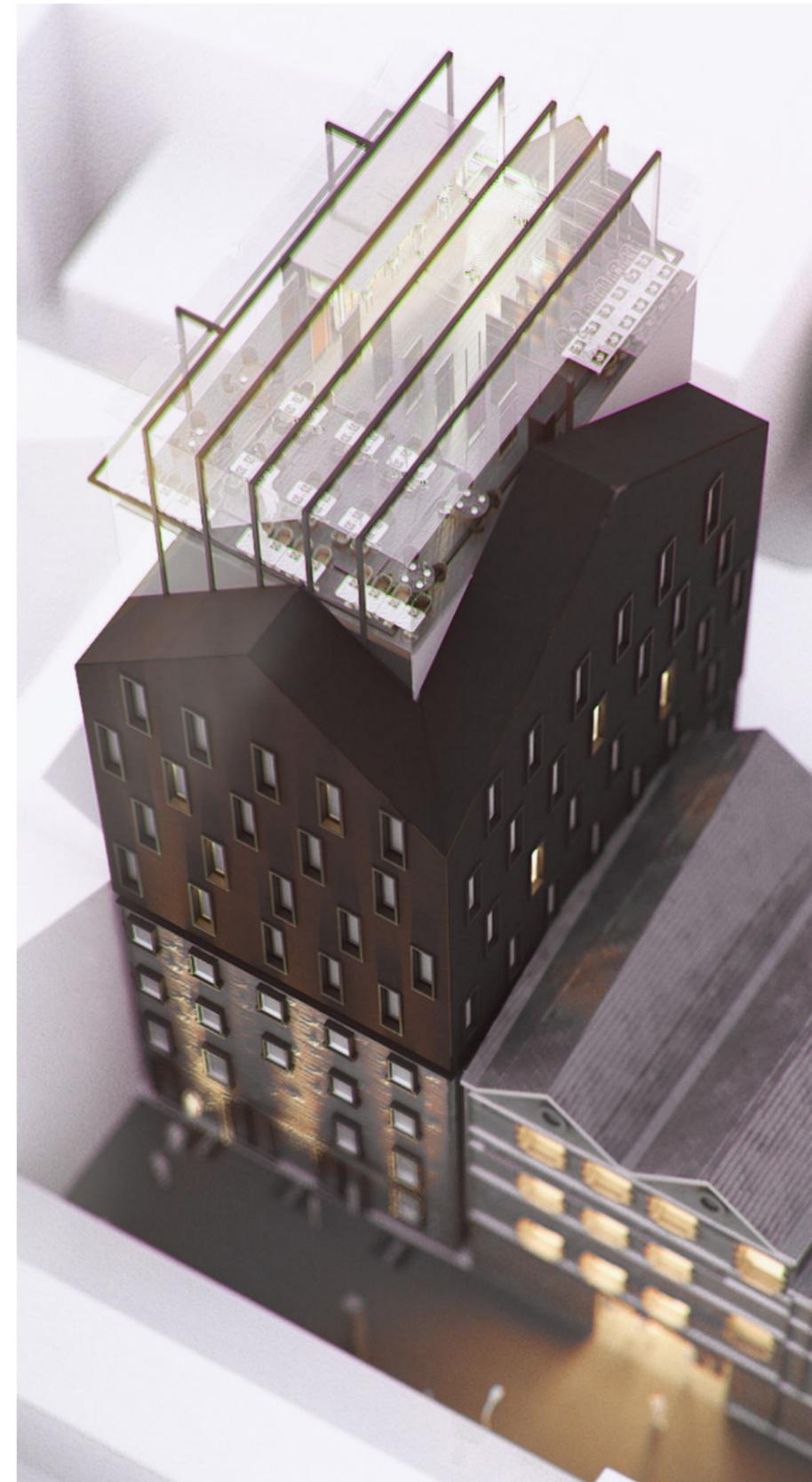
We are changing the construction industry with a new approach to design and delivery, reducing risk and cost with significant higher quality product.

We established Padstone as a specialist in platform based design solutions which offer:

- A guaranteed price
- A guaranteed completion date, and
- A product solution below market cost

Padstone has developed a modular system featuring best-in-class innovations, informed by the team's several decades of experience. Our model has been carefully honed to ensure speed, low cost and no compromise.

Benefits include a full design warranty, building control approval, advanced modular fire strategy and 12-year insurance-backed guarantee.



Modular Hotel : Dublin

# WHAT WE DO

We create a platform design to your brief which combines a best-in-class modular system design, a specialised consultant team and manufacturers whom are able to produce thousands of units a year. It is a uniquely streamlined approach allowing you to benefit from shorter project timeframes, more cost certainty and enhanced project returns.

## Fully designed at outset

All of our platform designed are fully designed to production drawings level at outset, guaranteeing a fixed price. Our modular systems can be procured, minimising risk and enabling cost certainty at an early stage in development. Modular buildings can replicate the most sophisticated designs within shorter time frames and without compromise.



Modular Residential : London

# HOW WE DO IT

## AI technology

We have devised a fully-integrated AI optimisation tool using the most advanced software on the market. It has been developed to test site viability and is linked to our system design, cost model and system engineering. Unique features include live cost modelling, live structural analysis and full BIM capability, ensuring comprehension at every stage of the development.

## System Design

We have three patents which combined offer

- Same floor to floor as traditional
- Same wall thickness as traditional
- Same fire strategy as traditional
- Uses standard BG systems for wall
- Uses standard BG floor system
- No unprotected voids between modules
- Plug and play services strategy
- Self sealing facade : no scaffolding
- Premier Warranty for the system



# PLATFORM 01 : LONDON APARTMENTS

We have developed a solution for the London mid-market apartments which delivered a fully complete building from a base price of 235sqft to 250sqft based on interior spec.



Modular Residential Scheme : Dublin

# PLATFORM 02 : ROOM2 APART HOTEL

We have developed a solution for the  
Room2 apart Hotel

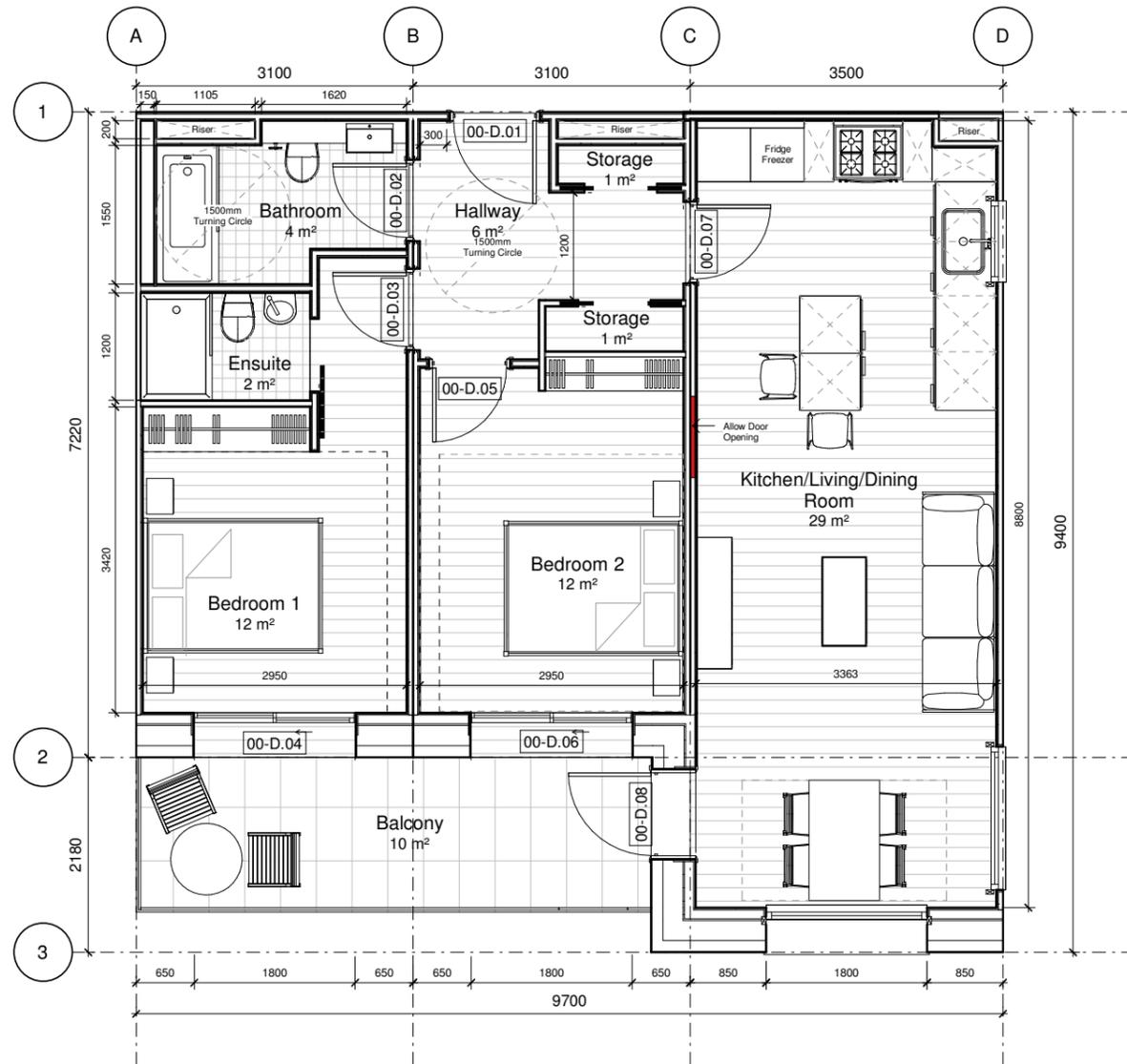


# PLATFORM 01 : LONDON APARTMENTS

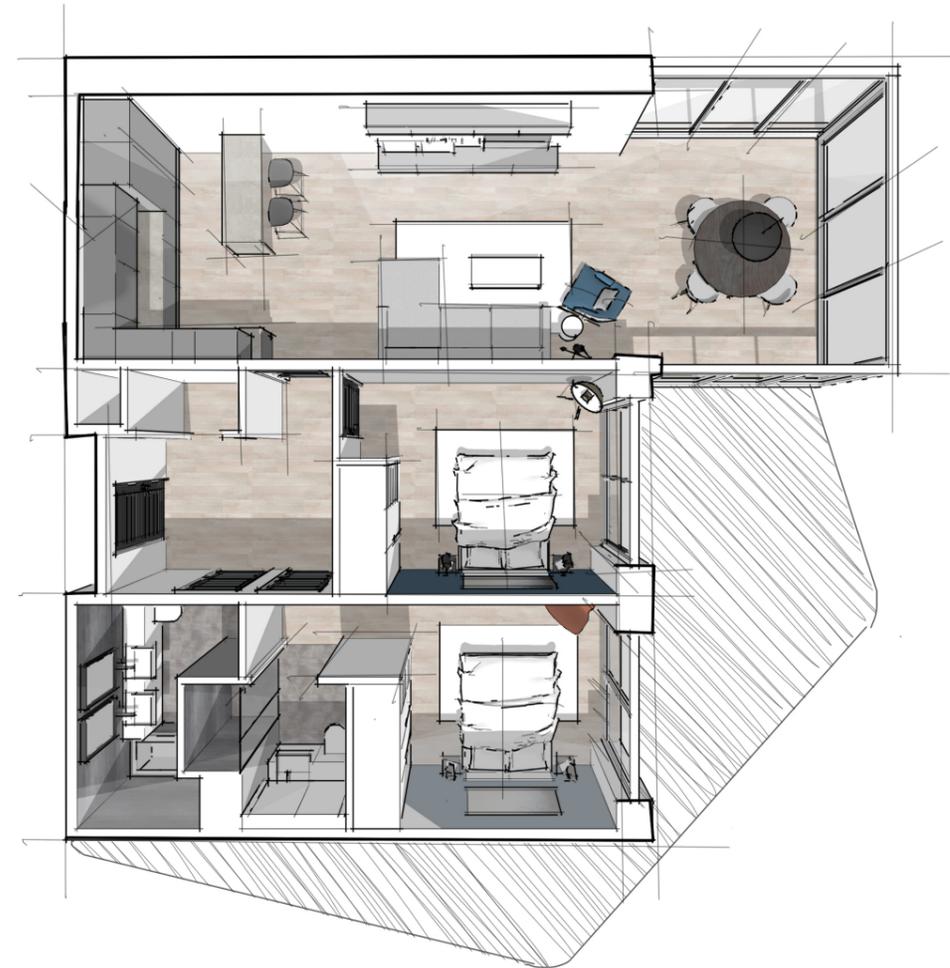




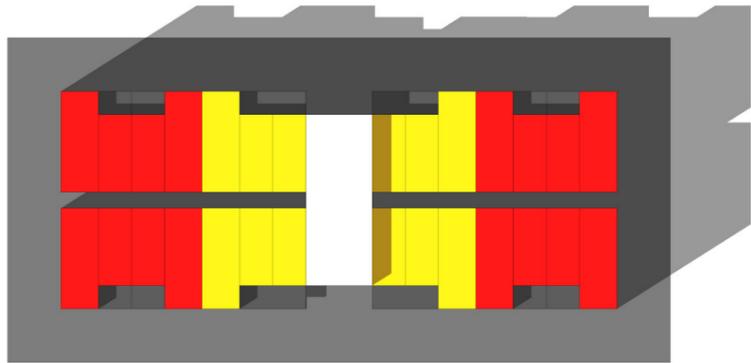
## Two Bedroom Type 1



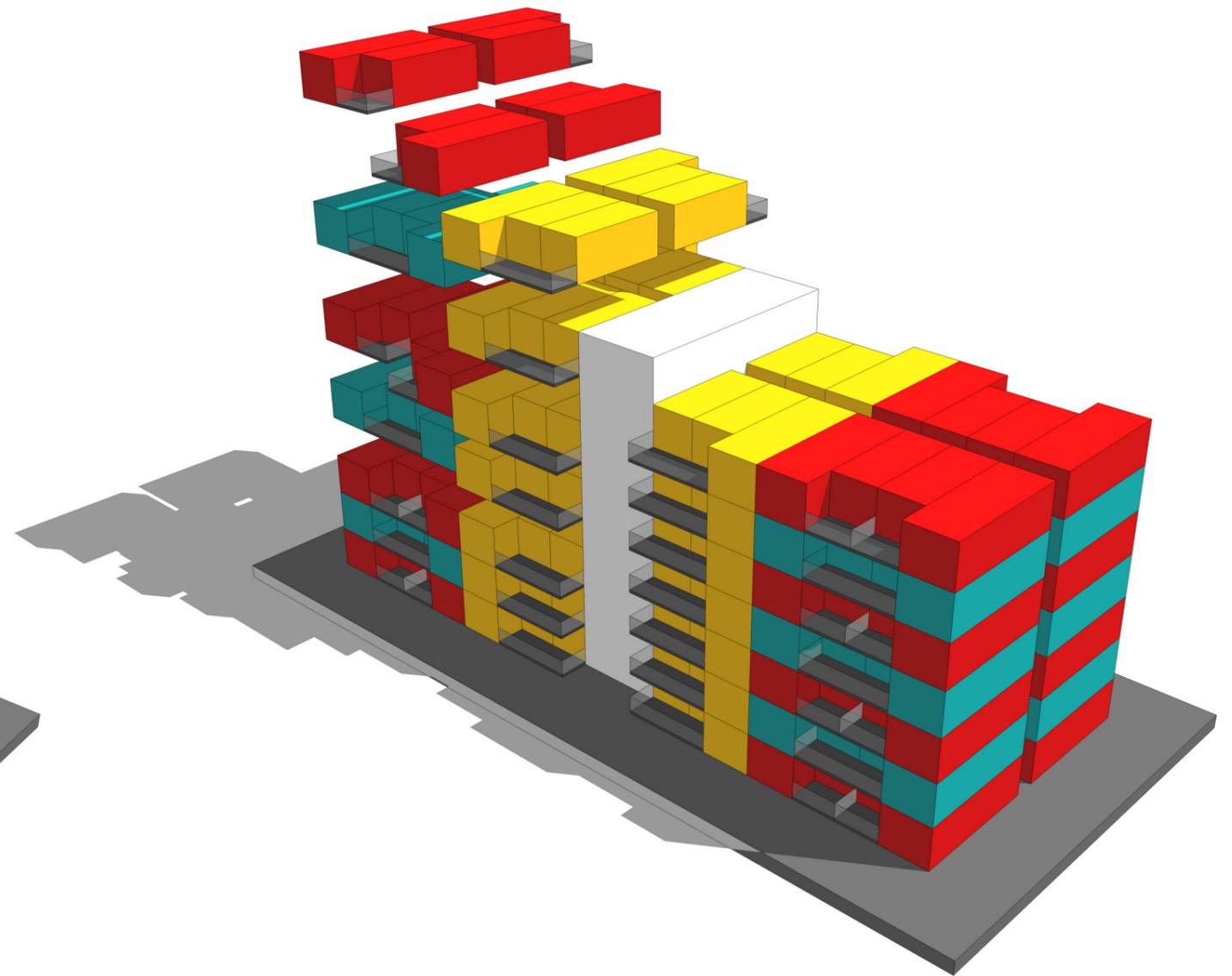
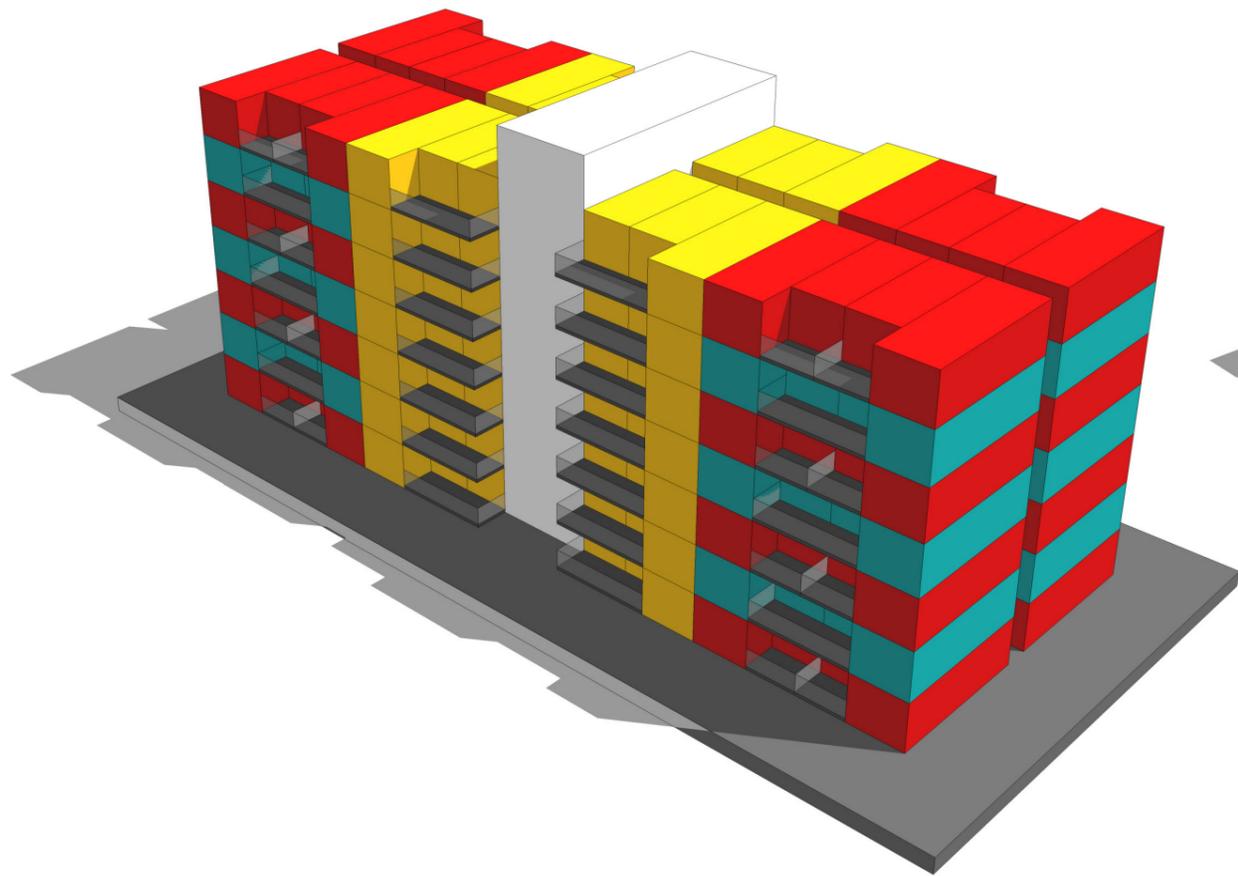
## Three Bedroom Type 1



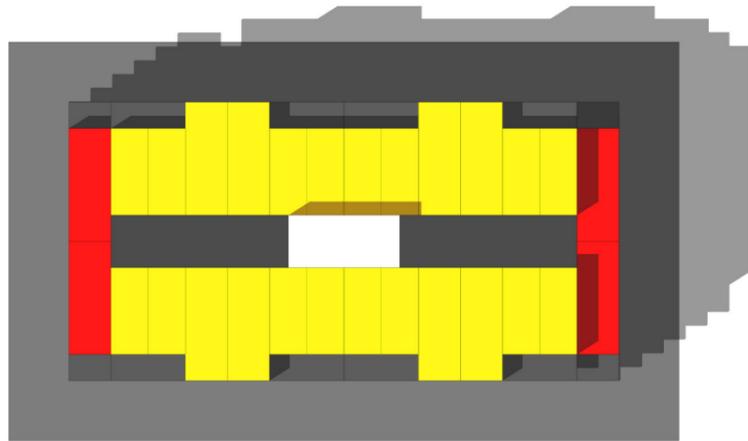
# Linear Site - 12 Apartment Cluster



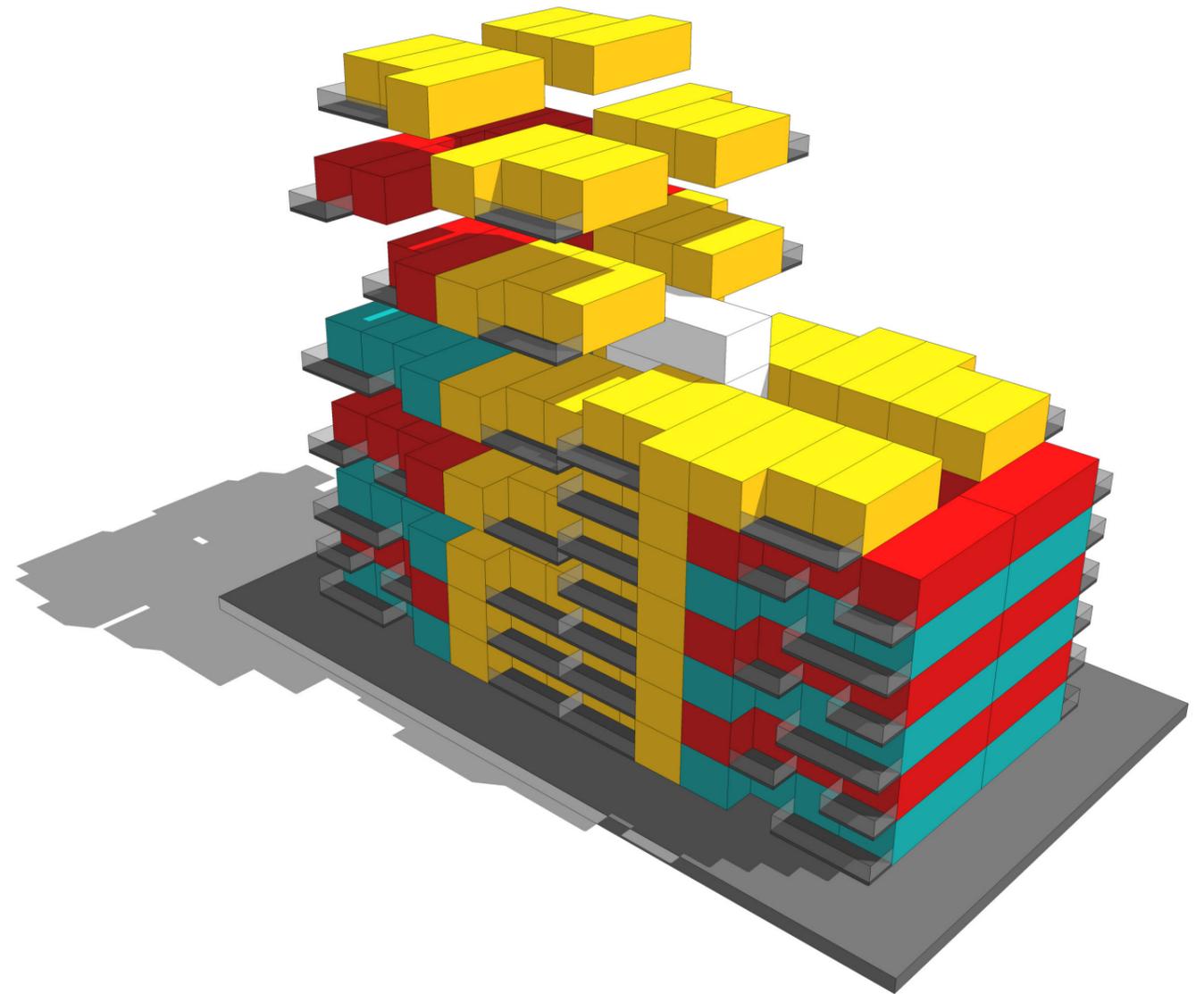
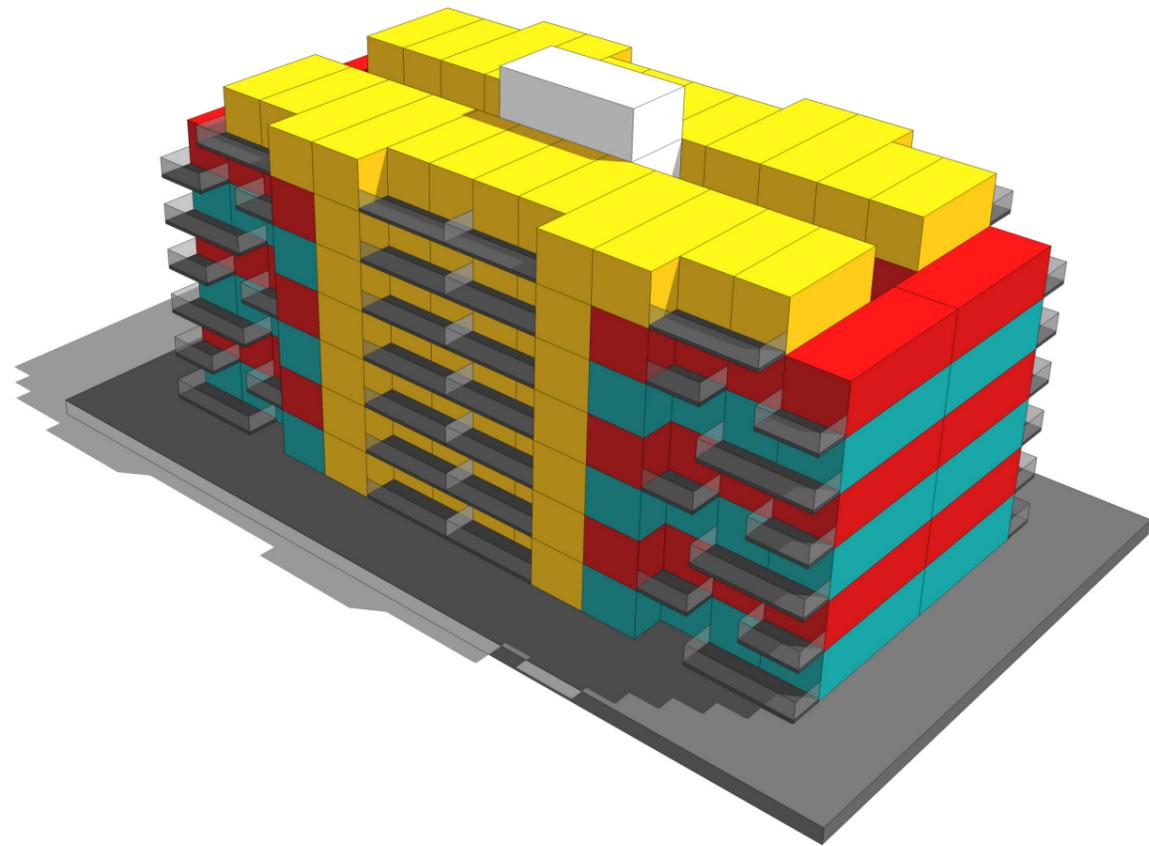
Plan View



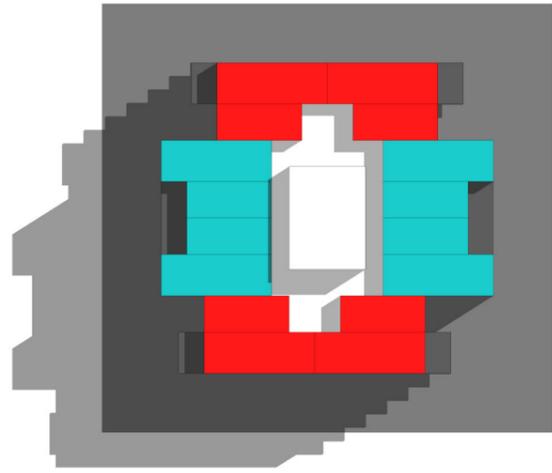
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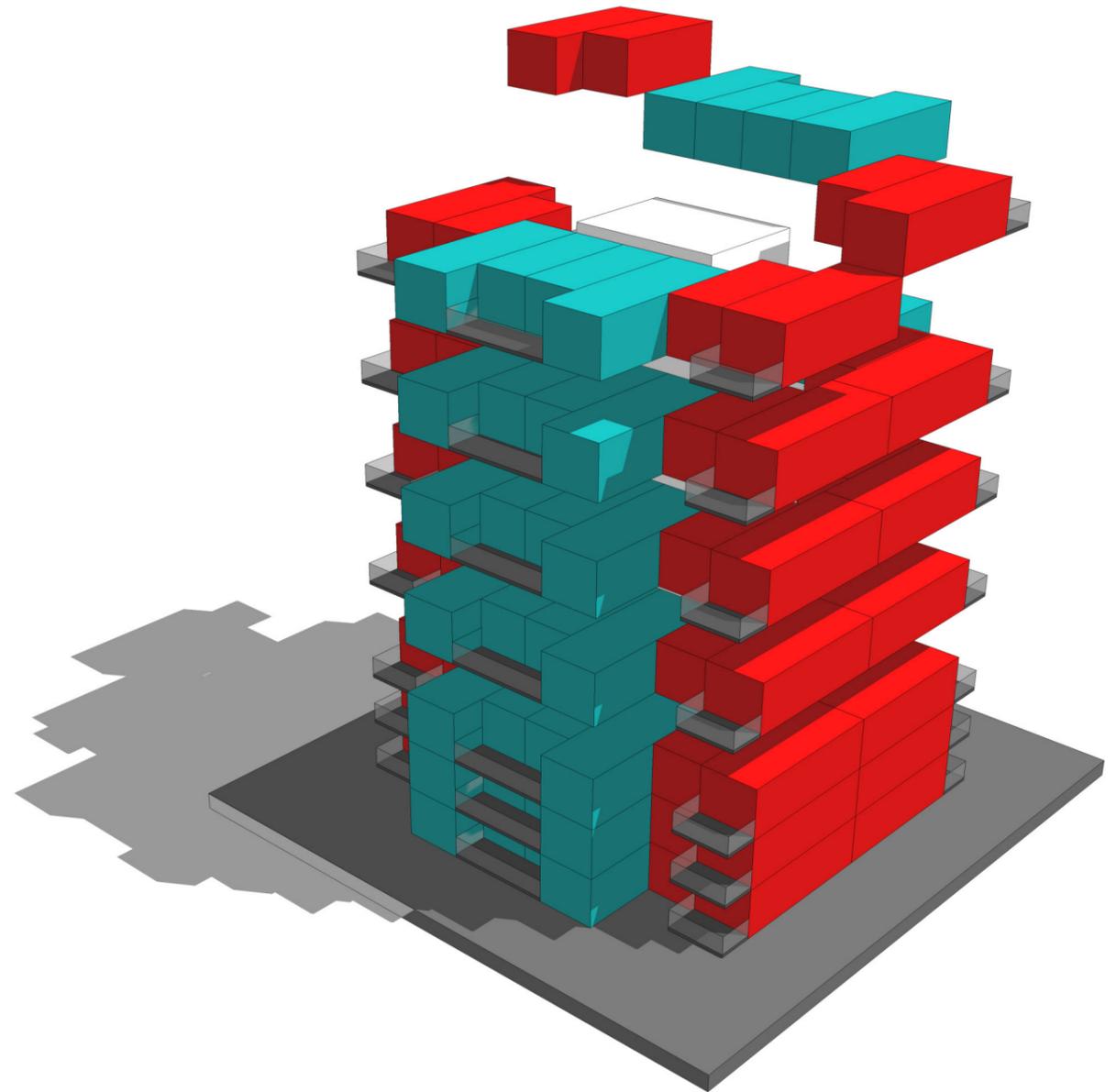
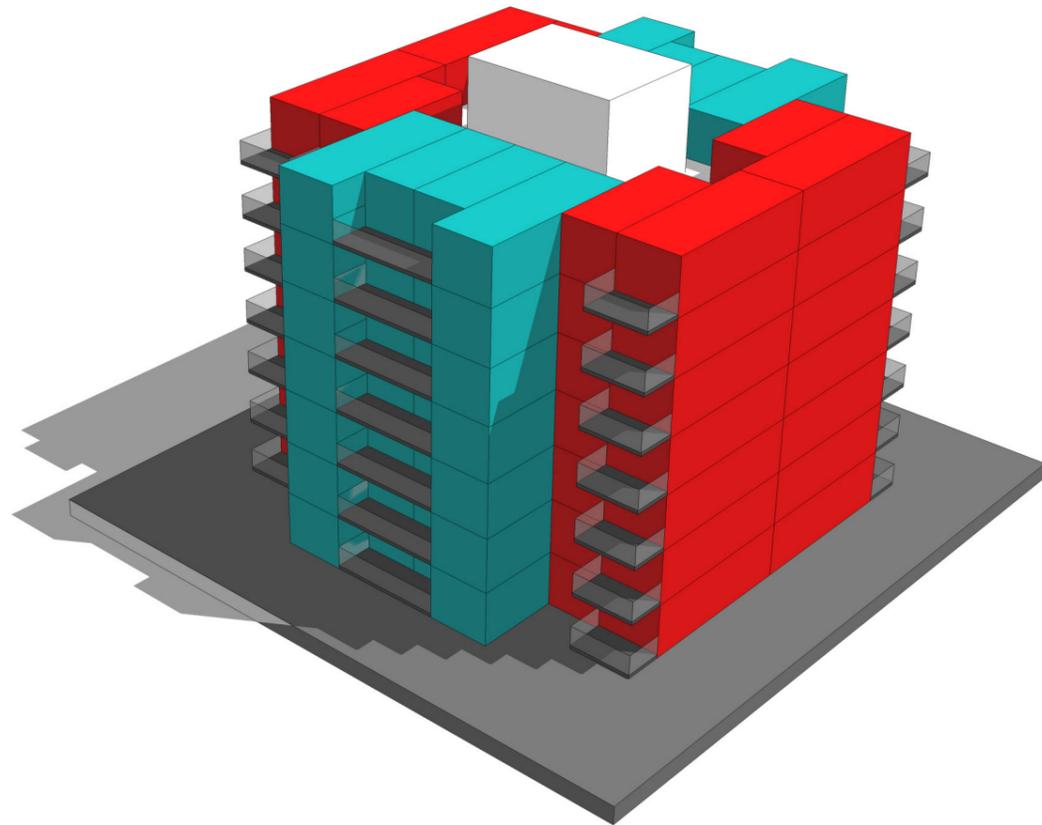
Plan View



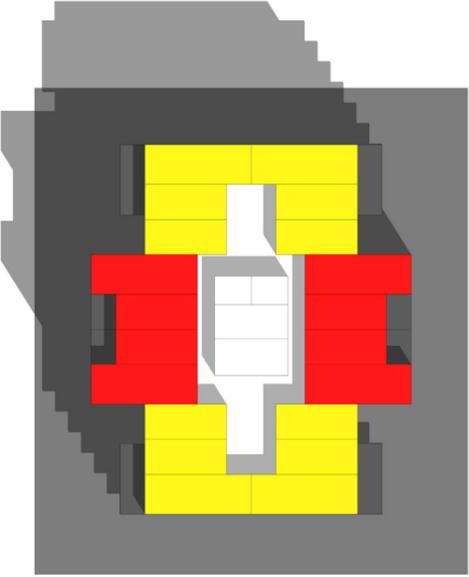
# Square Site - 6 Apartment Cluster



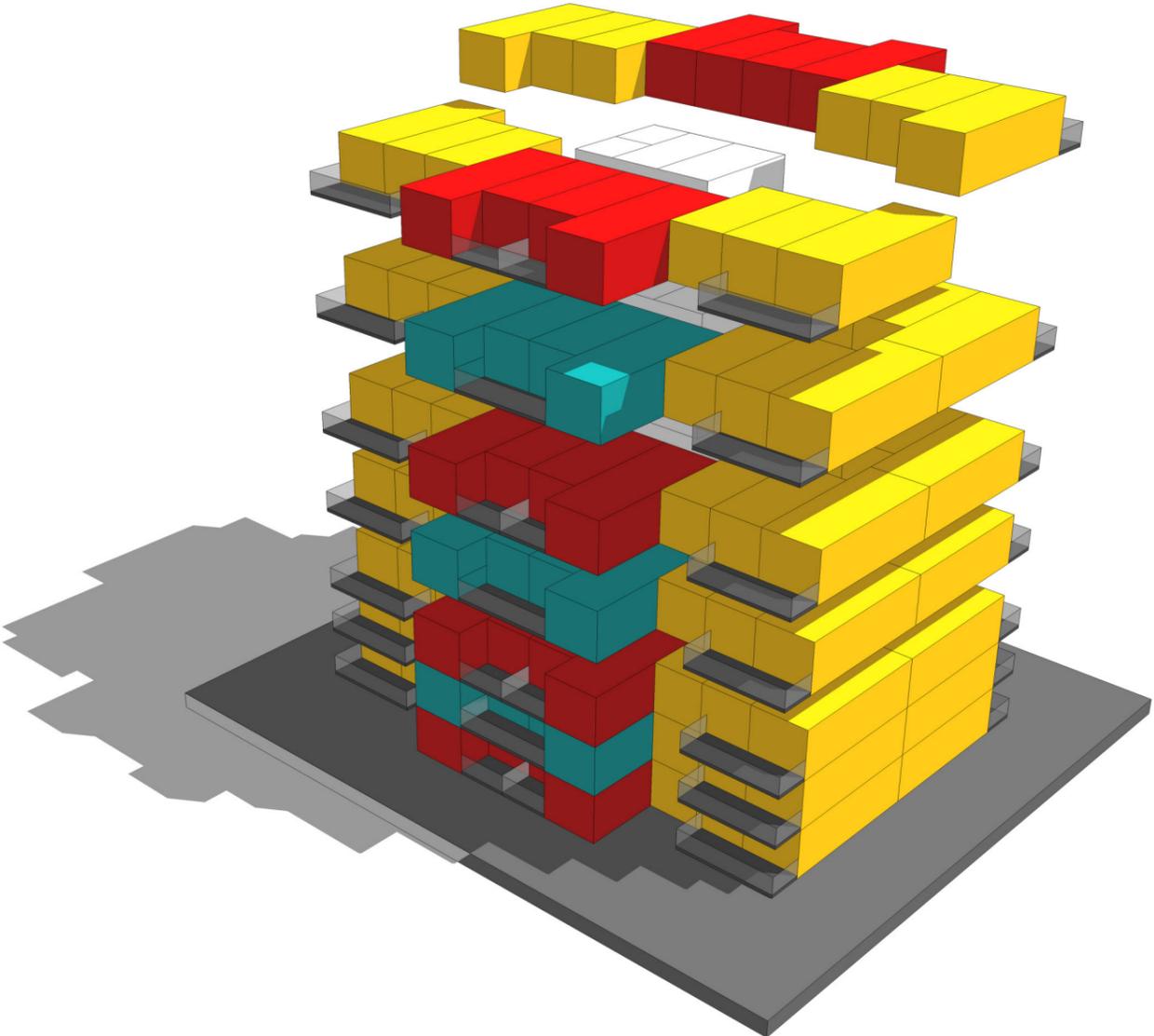
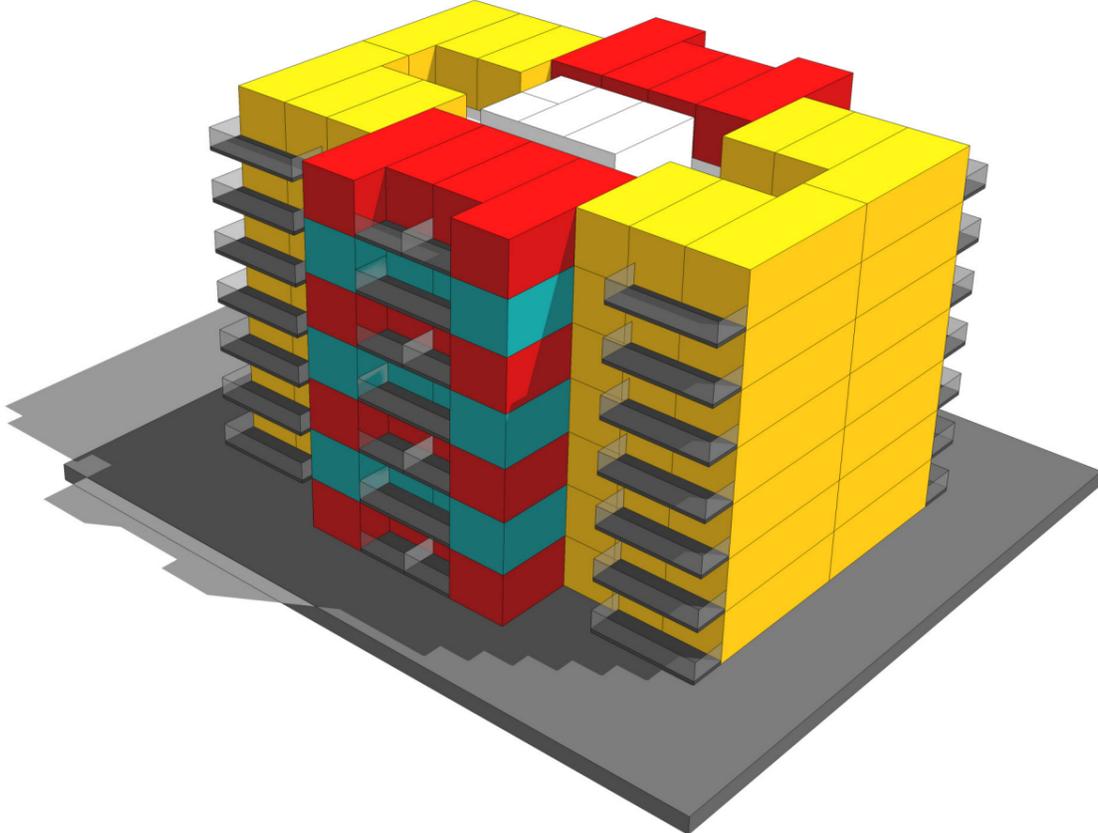
Plan View



Square Site - 8 Apartment Cluster



Plan View



# OFFER TO MARKET



## Cost Savings

mode Modular will deliver significant construction cost savings of over 10% on a like for like basis to current UK construction costs. The procurement savings are created by utilising the same design multiple times.



## Programme Savings

Padstone Modular will deliver total project time saving of c 40% from concept design through to project completion. This is achieved by achieving significant programme savings on pre planning design, detailed design and procurement as well as during on site construction compared to a standard residential development.



## Design Savings

Padstone Modular has a fully designed and integrated modular configuration which can be applied simply to the early design phases of a project. Design work that has already been carried out on this model and the many years of learning that has been applied to the design.

Kreo Design  
generates modular  
building designs

Kreo Design generates modular building designs  
[kreo.net/kreo-design](http://kreo.net/kreo-design)



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