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# Axxess Corporate Park

## Sustainability Management Plan

Prepared for: Dexus

**Project No:** MEL3438  
**Date:** 13 December 2022  
**Revision:** 01



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<b>Project:</b>	Axxess Corporate Park
<b>Location:</b>	1-31 Gilby Road Mount Waverly, VIC 3149
<b>Prepared by:</b>	ADP Consulting Pty Ltd Level 13/55 Collins Street, Melbourne VIC 3000
<b>Project No:</b>	MEL3438
<b>Revision:</b>	01
<b>Date:</b>	13 December 2022

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Rev	Date	Comment	Author	Signature	Technical Review	Signature	Authorisation & QA	Signature
00	30/09/2022	Draft	Navin Kumar Sridhar	NS	Tom Miers	TM	Tom Miers	TM
01	13/12/2022		Navin Kumar Sridhar	NS	Tom Miers	TM	Tom Miers	TM

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### Project Team

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<b>Client / Principal</b>	Dexus
<b>Architect</b>	Concept
<b>Sustainability Consultant</b>	ADP Consulting

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# Executive Summary

ADP Consulting has been commissioned to provide a Sustainable Management Plan (SMP) for the proposed development at 1-31 Gilby Road, Mount Waverley VIC 3149.

The aim of the SMP is to identify and convey the key sustainability opportunities embraced in the design and provide the Responsible Planning Authority with a clear indication of how the development integrates key ESD initiatives.

ADP Consulting benchmarked the design's potential ESD performance under each of the 10 key Sustainable Building categories following the Sustainable Management Plan in the Planning Process (SDAPP). The categories that have been assessed include Management, Water, Energy, Stormwater, Indoor Environment Quality (IEQ), Sustainable Transport, Waste, Urban Ecology, and Innovation.

The proposed development incorporates several ESD initiatives and currently targets 58 points out of 100 in BESS (refer to BESS Summary in Table 10), which equates to Best Practice.

We understand this will satisfy Council's desired performance of development within its boundaries.

# 1. Introduction

This report provides an overview of the Environmentally Sustainable Development (ESD) strategy for the proposed warehouse development at 1-31 Gilby Road, Mount Waverley VIC 3149 within the municipal boundaries of the City of Monash. The project has 2 warehouse buildings with 18 warehouses and offices across 3 storeys.

The objective of this report is to describe how best practice ESD will be incorporated in the development, including targets and proposed design approaches, and to demonstrate that the development meets or exceeds the standards required by the City of Monash Planning Scheme, specifically the requirement to achieve the design potential to a minimum +50% BESS score.

## 1.1 Site Overview

The site is located at 1-31 Gilby Road, Mount Waverley VIC 3149. The proposed development is comprised of the following area types:

- > Warehouse
- > Office
- > Multi-Level car park

## 1.2 Documentation

This report has been informed by Architectural drawings produced by Concept Architects drawings dated 09/12/2022.

## 1.3 Statutory Context

### 1.3.1 City of Monash

The site is situated within Mount Waverley in the municipal boundaries of the City of Monash. The City of Monash has Policy and objectives relating to ESD which are contained in clause 22.13, Environmentally Sustainable Development Policy, of the planning scheme. These policies and objectives have been taken into consideration throughout this assessment and in our advice given to the applicant of 1-31 Gilby Road, Mount Waverley development.

#### 22.13-1 Policy Basis

Monash City Council is committed to make Monash a more sustainable place to live, work and play. Critical to achieving this commitment is for development to meet appropriate environmental design standards. This policy aims to integrate environmental sustainability into land use planning, new developments, and redevelopment of existing infrastructure.

This policy provides a framework for early consideration of environmental sustainability at the building design stage to achieve the following efficiencies and benefits:

- > Easier compliance with building requirements through passive design
- > Reduction of costs over the life of the building
- > Improved affordability over the longer term through reduced running costs
- > Improved amenity and liveability
- > More environmentally sustainable urban form and
- > Integrated water management

If environmentally sustainable design is not considered at the time of planning approval, the ability to achieve environmentally sustainable development may be compromised by the time these matters are considered as part of a building approval. In addition, there may be difficulties or extra costs associated with retrofitting the development to implement environmentally sustainable design principles.

This policy does not prescribe performance outcomes. The policy enables the provision of information and provides decision guidelines which will assist in the assessment of whether development meets environmentally sustainable development objectives.

This policy complements a range of non-statutory measures aimed at encouraging environmentally sustainable development. These measures include educating residents and applicants, assisting applicants to use Environmentally Sustainable Development (ESD) tools, leading by example with Council projects, promotion of exemplary private projects and promotion of use of materials with favourable life cycle impacts.

## 22.13-2 Objectives

### Energy efficiency

- > To improve the efficient use of energy, by ensuring development demonstrates design potential for ESD initiatives at the planning stage.
- > To reduce total operating greenhouse gas emissions.
- > To reduce energy peak demand through design measures (e.g. appropriate building orientation, shading to glazed surfaces, optimise glazing to exposed surfaces, space allocation for solar panels and external heating and cooling systems).

### Water resources

- > To improve water efficiency.
- > To reduce total operating potable water use.
- > To encourage the collection and reuse of stormwater.
- > To encourage the appropriate use of alternative water sources (e.g. greywater).

### Indoor Environment Quality

- > To achieve a healthy indoor environment quality for the wellbeing of building occupants, including the provision of fresh air intake, cross ventilation, and natural daylight.
- > To achieve thermal comfort levels with minimised need for mechanical heating, ventilation and cooling.
- > To reduce indoor air pollutants by encouraging use of materials with low toxic chemicals.

- > To reduce reliance on mechanical heating, ventilation, cooling, and lighting systems.
- > To minimise noise levels and noise transfer within and between buildings and associated external areas.

#### **Stormwater Management**

- > To reduce the impact of stormwater run-off.
- > To improve the water quality of stormwater run-off.
- > To achieve best practice stormwater quality outcomes.
- > To incorporate the use of water sensitive urban design, including stormwater re-use.

#### **Transport**

- > To ensure that the built environment is designed to promote the use of walking, cycling and public transport, in that order.
- > To minimise car dependency.
- > To promote the use of low emissions vehicle technologies and supporting infrastructure.

#### **Waste management**

- > To promote waste avoidance, reuse and recycling during the design, construction, and operation stages of development.
- > To ensure durability and long-term reusability of building materials.
- > To ensure sufficient space is allocated for future changes in waste management needs, including (Where possible) composting and green waste facilities.

#### **Urban Ecology**

- > To protect and enhance biodiversity within the municipality.
- > To provide environmentally sustainable landscapes and natural habitats, and minimise the urban heat island effect.
- > To encourage the retention of significant trees.
- > To encourage the planting of indigenous vegetation
- > To encourage the provision of space for productive gardens, particularly in larger residential developments.

### **22.13-3 Policy**

It is policy that applications for the types of development listed in Table 1 be accompanied by information which demonstrates how relevant policy objectives will be achieved.

Table 1: ESD information required

<b>Type of Development</b>	<b>Application Requirements</b>	<b>Example Tools</b>
Development of a non-residential building with a gross floor area of more than 1000m <sup>2</sup>	Sustainability Management Plan (SMP)	<ul style="list-style-type: none"> <li>&gt; Green Star</li> <li>&gt; BESS</li> <li>&gt; MUSIC</li> <li>&gt; STORM</li> </ul>

### 22.13-4 Application Requirements

An application must be accompanied by either a Sustainable Design Assessment or a Sustainability Management Plan as specified in Table 1, as appropriate. A Sustainable Management Plan should:

- > provide a detailed assessment of the development. It may use relevant tools from the tools listed in the table, or an alternative assessment approach to the satisfaction of the responsible authority and
- > identify achievable environmental performance outcomes having regard to the objectives of this policy (as appropriate) and
- > demonstrate that the building has the design potential to achieve the relevant environmental performance outcomes, having regard to the site's opportunities and constraints and
- > document how the performance outcomes can be achieved.

Various assessment tools have been listed in Table 1 which may be used to assess how the proposed development addresses the objectives of this policy, as appropriate.



## 2. ESD Strategy

The following section provides details of the ESD initiatives following the Sustainable Management Plan in the Planning Process (SDAPP) which have been deemed potentially suitable for the project. These form the overall benchmarking assessment of the building. These initiatives are currently adopted or under consideration; best endeavours will be made to include these in the fully developed design.

### 2.1 Management

The SDAPP 'Management' category encourages and rewards the adoption of practices and processes that enable and support best practice sustainability outcomes throughout the different phases of a project's design, construction, and its ongoing operation.



Throughout the 'Management' category, SDAPP intends to improve the sustainability performance of a project by influencing areas where decision-making is critical. This category rewards the implementation of processes and strategies that support positive sustainability outcomes during construction. The category also promotes practices that ensure a project will be used to its optimum operational potential.

The 'Management' category rewards projects that achieve the following outcomes:

- > Coordinated approaches.
- > Commitment to implementation
- > Sustainable cultures and behaviours

Table 2: Actions for Building Management

Action	Response Strategies
Pre-Application Meeting	<ul style="list-style-type: none"> <li>&gt; ESD professional has been engaged to provide sustainability advice from schematic design to construction</li> <li>&gt; The ESD professional has been involved in a pre-application meeting with Council</li> </ul>
Thermal Performance	<ul style="list-style-type: none"> <li>&gt; Preliminary Deemed to Satisfy with a greater than 10% improvement against NCC2019 or JV3 thermal modelling will be undertaken for the final SMP report in accordance with Section J of the NCC2019.</li> </ul>
Metering	<ul style="list-style-type: none"> <li>&gt; Utility meters provided to all individual tenancies.</li> </ul>
Building Users Guide	<ul style="list-style-type: none"> <li>&gt; A Building User Guide will be produced and issued to building occupants and building managers.</li> <li>&gt; The Building Users' Guide may be a simple booklet and/or a combination of interpretative signage throughout the building with the purpose to facilitate more sustainable behaviour by building occupants.</li> </ul>
<b>BESS Score</b>	<b>100%</b>

## 2.2 Water

The SDAPP 'Water' category aims to encourage and reward initiatives that reduce the consumption of potable water through measures such as the incorporation of water efficient fixtures and building systems and water re-use.



Reductions in operational water consumption may be achieved through maximisation of water-efficiency within a project, as well as through the utilisation of reclaimed water sources.

The 'Water' category rewards projects that achieve the following outcomes:

- > The selection of equipment that is more water efficient than comparable standard practice equivalents.
- > The use of water-efficient supplementary equipment.
- > The selection of water-efficient toilets taps and showers.

Table 3: Actions to maximise Water Efficiency

Action	Response Strategies
Efficient Fixtures and Fittings	<ul style="list-style-type: none"> <li>&gt; All sanitary fixtures and water appliances shall have the WELS rating stated below:               <ul style="list-style-type: none"> <li>– Showerhead – 4 star WELS (<math>\geq 6.0</math> but <math>\leq 7.5</math>)</li> <li>– Kitchen taps – 6 star</li> <li>– Bathroom taps – 6 star</li> <li>– Urinals – 6 star</li> <li>– WC – 4 star</li> </ul> </li> </ul>
Rainwater Harvesting and Reuse	<p><b>East Warehouse</b></p> <ul style="list-style-type: none"> <li>&gt; 24,860m<sup>2</sup> of roof catchment area</li> <li>&gt; Storage in a 40kL rainwater tank</li> <li>&gt; Connection to all East Warehouse toilets, urinals, irrigation and washdown areas</li> </ul> <p><b>West Warehouse</b></p> <ul style="list-style-type: none"> <li>&gt; 23,184m<sup>2</sup> of roof catchment area</li> <li>&gt; Storage in a 40kL rainwater tank</li> <li>&gt; Connection to all West Warehouse toilets, urinals, irrigation and washdown areas</li> </ul>
Water Efficient Landscaping	<ul style="list-style-type: none"> <li>&gt; Species planted on site to be native and drought tolerant, and do not require ongoing watering after an initial period of establishment.</li> </ul>
Fire Protection System Test Water Reuse	<ul style="list-style-type: none"> <li>&gt; At least 80% of the annual fire protection system test water will be captured in the fire tanks and reused.</li> </ul>
<b>BESS Score</b>	<b>57%</b>

## 2.3 Energy



The SDAPP 'Energy' category aims to reward projects that are designed and constructed to reduce their overall operational energy consumption below that of a comparable standard practice building. Such reductions are directly related to reduced greenhouse gas emissions, lower overall energy demand as well as reductions in operating costs for building owners and occupants.

Through the 'Energy' category, SDAPP aims to ensure reductions in greenhouse gas emissions by facilitating efficient energy usage and encouraging the utilisation of energy generated by low-emission sources.

The 'Energy' category rewards projects that achieve the following outcomes:

- > The implementation of well-designed systems, aimed at lower operating emissions.
- > The selection of high efficiency equipment over less energy efficient alternatives.
- > The implementation of well-designed and zoned lighting that is energy efficient and appropriate for a space's use.
- > The use of efficient supplementary equipment; and
- > The procurement of zero carbon and low carbon energy sources.

Table 4: Actions to maximise Energy Efficiency

Action	Response Strategies
Renewable Energy Systems	> A 99kW PV system will be installed on the roof.
Thermal Performance non-residential	> Preliminary Deemed to Satisfy with a greater than 10% improvement against NCC2019 or JV3 thermal modelling will be undertaken for the final SMP report in accordance with Section J of the NCC2019.
Internal Lighting	<ul style="list-style-type: none"> <li>&gt; The internal lighting maximum illumination power density must meet the requirements in Table J6.2a of the NCC2019.</li> <li>&gt; All lighting shall be high-efficiency LED.</li> </ul>
Electrification	> The development is all-electric.
<b>BEES Score</b>	<b>72%</b>



## 2.4 Stormwater

The SDAPP 'Stormwater' category aims to ensure projects are responsibly treating stormwater to reduce the amount of polluted stormwater run-off entering local waterways such as rivers, streams, wetlands, and bays. This can be achieved by the following water sensitive urban design strategies (WSUD), rainwater tanks, raingardens, porous paving, and landscaping.

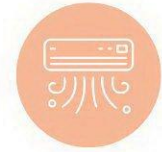
To demonstrate compliance, a score of 100% must be achieved using the MUSIC tool, demonstrating that the following has been achieved:

- > Suspended solids – 80% retention of typical urban load
- > Total Nitrogen – 45% retention of typical urban load
- > Total Phosphorous – 45% retention of typical urban load
- > Litter – 70% reduction of typical urban load

Table 5: Actions to achieve WSUD

Action	Response Strategies
Stormwater Treatment	<p><b>East Warehouse</b></p> <ul style="list-style-type: none"> <li>&gt; 24,860m<sup>2</sup> of roof catchment area</li> <li>&gt; Storage in a 40kL rainwater tank</li> <li>&gt; Connection to all East Warehouse toilets, urinals, irrigation and washdown areas</li> </ul> <p><b>West Warehouse</b></p> <ul style="list-style-type: none"> <li>&gt; 23,184m<sup>2</sup> of roof catchment area</li> <li>&gt; Storage in a 40kL rainwater tank</li> <li>&gt; Connection to all West Warehouse toilets, urinals, irrigation and washdown areas.</li> </ul> <p><b>Surrounding Areas and Rainwater Tank Overflow</b></p> <ul style="list-style-type: none"> <li>&gt; Stormwater directed to existing council underground drainage during minor overflow</li> <li>&gt; Overland flow will be conveyed through the site during major overflow. The flow path will be sized during detailed design.</li> <li>&gt; Two raingardens (bioretention systems) will be used to treat runoff from all areas of the subject site.</li> <li>&gt; The raingardens have been sized using MUSIC modelling. Refer Appendix B Stormwater Management Strategy for calculations and results.</li> </ul>
<b>BESS Score</b>	<b>100%</b>

## 2.5 Indoor Environment Quality



The SDAPP 'Indoor Environment Quality' category aims to encourage and reward initiatives that enhance the comfort and well-being of occupants. The credits within this category address issues such as natural daylight, air quality and thermal comfort.

Through the 'Indoor Environment Quality' category, SDAPP aims to achieve sustainability performance improvements in a manner that also improves occupants' experience of the space. While it is possible to reduce a project's energy intensity by simply providing occupants with poor lighting quality for example, the 'Indoor Environment Quality' category recognises that buildings are designed for people and that reductions in energy use should never be made at the expense of the occupants' health and wellbeing.

By rewarding both energy efficiency and encouraging occupant well-being, the BESS rating system promotes and rewards a holistic approach to sustainability that results in multiple benefits.

The 'Indoor Environment Quality' category rewards projects that achieve the following outcomes:

- > Increased comfort and wellbeing
- > Reduced exposure to pollutants

Table 6: Actions to maximise Indoor Environment Quality

Action	Response Strategies
Daylight Access	> At least 33% of regular use areas to achieve adequate BESS Daylight Standards. Refer Appendix C for Daylight summary.
Ventilation	> 100% of regular use areas to achieve effectively natural ventilation.
Air Quality	<ul style="list-style-type: none"> <li>&gt; All paints, adhesives and sealants applied on-site as part of the proposed works shall meet the maximum Total Volatile Organic Compound (TVOC) limits outlined in Appendix D.</li> <li>&gt; All engineered wood products including particleboard, plywood, Medium Density Fibreboard (MDF), Laminated Veneer Lumber (LVL), High-Pressure Laminate (HPL), Compact Laminate and decorative overlaid wood panels used as part of the proposed works shall meet the Formaldehyde emission limits outlined in Appendix E.</li> </ul>
<b>BESS Score</b>	<b>58%</b>

## 2.6 Transport



The SDAPP 'Transport' category aims to reward projects that facilitate a reduction of the dependency of occupants on private car use as an important means of reducing overall greenhouse gas emissions. The use of motor vehicles directly contributes to climate change in two ways – through the high amounts of energy required to produce cars and build and maintain supporting road transport infrastructure and services; and the direct emissions that result from car operations.

If reliance on individual motor vehicle transportation is to be reduced, it is necessary to maximise alternative transportation options. Rather than limiting access to private fossil fuel vehicles, the 'Transport' category aims to encourage and reward initiatives that reduce the need for their use. This may include initiatives that encourage the use of public transport options, cycling or walking, and the selection of sites that are close to local amenities.

The 'Transport' category rewards projects that achieve the following outcomes:

- > The selection of sites that have readily accessible public transport options.
- > The selection of sites within close proximity of a diversity of amenities.
- > The facilitation and encouragement of the use of alternative transport options, such as bicycles or electric vehicles.

Table 7: Actions to maximise Sustainable Transport

Action	Response Strategies
Electric Vehicle Charging	> At least one space will be provided with electric vehicle charging infrastructure
Motorbike parking	> Minimum of 5% or 5 parking spaces are designed and labelled for motorbikes or mopeds/scooters.
<b>BESS Score</b>	<b>37%</b>



## 2.7 Waste

The SDAPP 'Waste category aims to address the consumption of resources within a building construction context, by encouraging the selection of lower-impact materials. The category also encourages absolute reductions in the amount of waste generated or the recycling of as much of the waste generated as possible.

The 'Materials' category rewards projects that achieve the following outcomes:

- > Use of products and materials with lower impact.
- > Reduction in waste to landfill

Table 8: Actions for Sustainable Material Selection

Action	Response Strategies
Operational Waste – Convenience of recycling	> Clearly labelled recycling bins to be provided wherever a general waste bin is located, to facilitated recycling.
Construction and Demolition Waste Recycling	> The project will recycle at least 70% of the construction and demolition waste.
<b>BESS Score</b>	<b>33%</b>



## 2.8 Urban Ecology

The SDAPP 'Land Use & Ecology' category aims to reduce the negative impacts on sites' ecological value because of urban development and reward projects that minimise harm and enhance the quality of local ecology.

The 'Land Use & Ecology' category rewards projects that achieve the following outcomes:

- > Site sustainability.
- > Reducing ecological impacts from occupied sites.

Table 9: Actions for Land Use and Ecology

Action	Response Strategies
Vegetation	> Approximately 8% of the site is covered in vegetation.
<b>BESS Score</b>	<b>12%</b>



### 3. BESS Assessment Summary

BESS provides a framework for benchmarking the ESD achievement of a building design. The tool includes credits under a range of categories which may be used to guide ESD and tally a score which corresponds to the following benchmarks:

- > +50% – Best Practice
- > +70% – Excellence

A BESS assessment has been completed for the development to provide a guide to the sustainability initiatives that will be implemented in the design.

In summary, the development achieves a total BESS score of 58 out of 100 (refer Table 11). This highlights the high commitment to sustainable development in the design of the building.

Table 10: BESS Summary

SDAPP Criteria	Score Achieved
Management	100%
Water	57%
Energy	72%
Stormwater	100%
IEQ	58%
Transport	37%
Waste	33%
Urban Ecology	12%
<b>BESS SCORE</b>	<b>58%</b>



# Appendix A

# BESS Report

# BESS Report

Built Environment Sustainability Scorecard

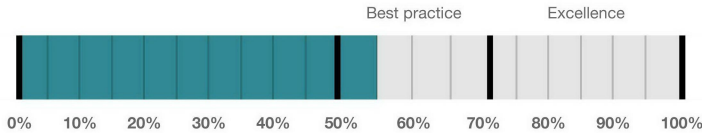


This BESS report outlines the sustainable design commitments of the proposed development at 1 Gilby Rd Mount Waverley VIC 3149. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Monash City Council.

Note that where a Sustainability Management Plan is required, the BESS report must be accompanied by a report that further demonstrates the development's potential to achieve the relevant environmental performance outcomes and documents the means by which the performance outcomes can be achieved.

**Note:** This is a DRAFT and not suitable for submission to council

## Your BESS Score



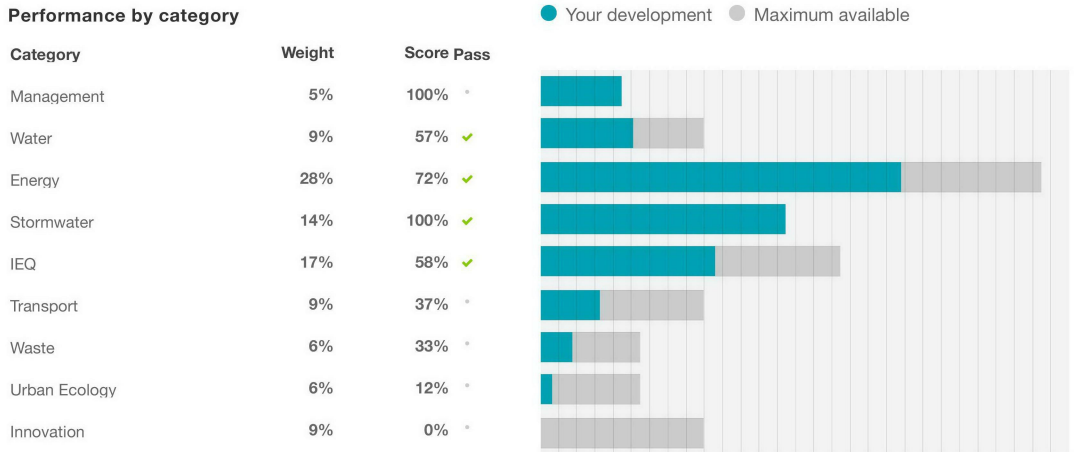
**58%**

## Project details

Address	1 Gilby Rd Mount Waverley VIC 3149
Project no	E11078F1
BESS Version	BESS-7
Site type	Non-residential development
Account	sustainabilityteam@adpconsulting.com.au
Application no.	
Site area	60,870.00 m <sup>2</sup>
Building floor area	81,420.00 m <sup>2</sup>
Date	13 December 2022
Software version	1.7.1-B.393



## Performance by category



## Buildings

Name	Height	Footprint	% of total footprint
Warehouse East	3	24,854 m <sup>2</sup>	51%
Warehouse West	3	23,232 m <sup>2</sup>	48%

## Dwellings & Non Res Spaces

### Non-Res Spaces

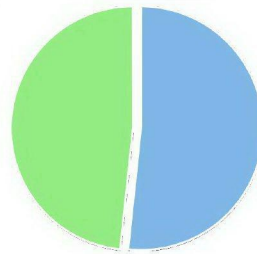
Name	Quantity	Area	Building	% of total area
<b>Office</b>				
East Main Office	9	280 m <sup>2</sup>	Warehouse East	3%
West Main Offices	9	280 m <sup>2</sup>	Warehouse West	3%
East Dock Office	9	50.0 m <sup>2</sup>	Warehouse East	< 1%
West Dock Office	9	50.0 m <sup>2</sup>	Warehouse West	< 1%
<b>Total</b>	<b>36</b>	<b>5,940 m<sup>2</sup></b>	<b>7%</b>	
<b>Lab/Warehouse</b>				
Warehouse East	1	40,980 m <sup>2</sup>	Warehouse East	50%
Warehouse West	1	34,500 m <sup>2</sup>	Warehouse West	42%
<b>Total</b>	<b>2</b>	<b>75,480 m<sup>2</sup></b>	<b>92%</b>	

Building Type composition



● Lab/Warehouse ● Office

Building composition



● Warehouse East ● Warehouse West

## Supporting information

### Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.2	Individual utility meters annotated		-







Credit	Requirement	Response	Status
Management 3.3	Common area submeters annotated		-
Water 3.1	Water efficient garden annotated		-
Energy 3.1	Carpark with natural ventilation or CO monitoring system		-
Energy 4.2	Floor plans showing location of photovoltaic panels as described.		-
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)		-
Transport 2.1	Location of electric vehicle charging infrastructure		-
Transport 2.3	All nominated motorbicycle parking spaces		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 2.1	Vegetated areas		-

**Supporting evidence**

Credit	Requirement	Response	Status
Management 2.3a	Section J glazing assessment		-
Management 2.3b	Preliminary modelling report		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.1	Provide a written explanation of either the fully natural carpark ventilation or carbon monoxide monitoring, describing how these systems will work, what systems are required for them to be fully integrated and who will be responsible for their implementation throughout the design, procurement and operational phases of the building life.		-
Energy 3.7	Provide a written description of the average lighting power density to be installed in the development and specify the lighting type(s) to be used.		-
Energy 4.2	Specify the solar shading device(s).		-
Stormwater 1.1	STORM report, MUSIC modelling		-
IEQ 1.4	Indoor air quality short report, including design options used, results and recommendations.		-

**Credit summary**

**Management Overall contribution 4.5%**

	<b>100%</b>
1.1 Pre-Application Meeting	 100%
2.3 Thermal Performance Modelling - Non-Residential	 100%
3.2 Metering - Non-Residential	 100%
3.3 Metering - Common Areas	 100%
4.1 Building Users Guide	 100%

**Water Overall contribution 9.0%**

	<b>Minimum required 50%</b>	<b>57%</b>  <b>Pass</b>
1.1 Potable water use reduction	 40%	
3.1 Water Efficient Landscaping	 100%	
4.1 Building Systems Water Use Reduction	 100%	

**Energy Overall contribution 27.5%**

		<b>Minimum required 50%</b>	<b>72%</b>	<b>✔ Pass</b>
1.1 Thermal Performance Rating - Non-Residential			37%	
2.1 Greenhouse Gas Emissions			100%	
2.2 Peak Demand			100%	
2.3 Electricity Consumption			100%	
2.4 Gas Consumption			N/A	✦ Scoped Out
			No gas connection in use	
2.6 Electrification			100%	
3.1 Carpark Ventilation			100%	
3.2 Hot Water			100%	
3.7 Internal Lighting - Non-Residential			100%	
4.1 Combined Heat and Power (cogeneration / trigeneration)			N/A	✦ Scoped Out
			No cogeneration or trigeneration system in use.	
4.2 Renewable Energy Systems - Solar			100%	
4.4 Renewable Energy Systems - Other			0%	⊘ Disabled
			No other (non-solar PV) renewable energy is in use.	

**Stormwater Overall contribution %**

		<b>Minimum required 100%</b>	<b>100%</b>	<b>✔ Pass</b>
1.1 Stormwater Treatment			100%	

**IEQ Overall contribution 16.5%**

		<b>Minimum required 50%</b>	<b>58%</b>	<b>✔ Pass</b>
1.4 Daylight Access - Non-Residential			37%	✔ Achieved
2.3 Ventilation - Non-Residential			66%	✔ Achieved
3.4 Thermal comfort - Shading - Non-residential			92%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential			0%	
4.1 Air Quality - Non-Residential			100%	

**Transport Overall contribution 9.0%**

		<b>37%</b>
1.4 Bicycle Parking - Non-Residential		0%
1.5 Bicycle Parking - Non-Residential Visitor		0%
1.6 End of Trip Facilities - Non-Residential		0%  Disabled
Credit 1.4 must be complete first.		
2.1 Electric Vehicle Infrastructure		100%
2.2 Car Share Scheme		0%
2.3 Motorbikes / Mopeds		100%

**Waste Overall contribution 5.5%**

		<b>33%</b>
1.1 - Construction Waste - Building Re-Use		0%
2.1 - Operational Waste - Food & Garden Waste		0%
2.2 - Operational Waste - Convenience of Recycling		100%

**Urban Ecology Overall contribution 5.5%**

		<b>12%</b>
1.1 Communal Spaces		0%
2.1 Vegetation		25%
2.2 Green Roofs		0%
2.3 Green Walls and Facades		0%
3.2 Food Production - Non-Residential		0%

**Innovation Overall contribution 9.0%**

		<b>0%</b>
1.1 Innovation		0%

## Credit breakdown

### Management Overall contribution 4%

<b>1.1 Pre-Application Meeting</b>	100%
Score Contribution	This credit contributes 37.5% towards the category score.
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?
Question	Criteria Achieved ?
Project	Yes
<b>2.3 Thermal Performance Modelling - Non-Residential</b>	100%
Score Contribution	This credit contributes 25.0% towards the category score.
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2019 Section J1.5?
Question	Criteria Achieved ?
Office	Yes
Lab/Warehouse	Yes
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?
Question	Criteria Achieved ?
Office	Yes
Lab/Warehouse	Yes
<b>3.2 Metering - Non-Residential</b>	100%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Have utility meters been provided for all individual commercial tenants?
Question	Criteria Achieved ?
Office	Yes
Lab/Warehouse	Yes
<b>3.3 Metering - Common Areas</b>	100%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Have all major common area services been separately submetered?
Question	Criteria Achieved ?
Office	Yes
Lab/Warehouse	Yes
<b>4.1 Building Users Guide</b>	100%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	Yes



**Water** Overall contribution 5% Minimum required 50%

<b>Water Approach</b>	
What approach do you want to use for Water?:	Use the built in calculation tools
<b>Project Water Profile Question</b>	
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
<b>Water fixtures, fittings and connections</b>	
Building:	
Warehouse	
West	
Main	
Offices	
West	
Dock	
Office	
Warehouse	
West	
Warehouse	
East	
Main	
Office	
East	
Dock	
Office	
Warehouse	
East	
Showerhead: All	4 Star WELS (>= 6.0 but <= 7.5)
Bath: All	Scope out
Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 6 Star WELS rating
Dishwashers: All	>= 5 Star WELS rating
WC: All	>= 4 Star WELS rating
Urinals: All	>= 6 Star WELS rating
Washing Machine Water Efficiency: All	Scope out

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Which non-potable water source is the dwelling/ space connected to?:

West

Table

Main Offices

West Dock Office

Warehouse West

East

Table

Main Office

East Dock Office

Warehouse East

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Non-potable water source connected to Toilets:	All	Yes
Non-potable water source connected to Laundry (washing machine):	All	No
Non-potable water source connected to Hot Water System:	All	No


**Rainwater Tanks**



What is the total roof area connected to the rainwater tank?:		
West Tank		23,184 m <sup>2</sup>
East Tank		24,860 m <sup>2</sup>
<b>Tank Size:</b>		
West Tank		40,000 Litres
East Tank		40,000 Litres
<b>Irrigation area connected to tank:</b>		
West Tank		2,388 m <sup>2</sup>
East Tank		2,897 m <sup>2</sup>

<b>Is connected irrigation area a water efficient garden?:</b>	
West Tank	Yes
East Tank	Yes
<b>Other external water demand connected to tank?:</b>	
West Tank	0.0 Litres/Day
East Tank	0.0 Litres/Day
<b>1.1 Potable water use reduction</b>	<b>40%</b>
Score Contribution	This credit contributes 71.4% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Output	Reference
Project	106009 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	73489 kL
Output	Proposed (including rainwater and recycled water use)
Project	69325 kL
Output	% Reduction in Potable Water Consumption
Project	34 %
Output	% of connected demand met by rainwater
Project	20 %
Output	How often does the tank overflow?
Project	Very Often
Output	Opportunity for additional rainwater connection
Project	15060 kL
<b>3.1 Water Efficient Landscaping</b>	<b>100%</b>
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Will water efficient landscaping be installed?
Question	Criteria Achieved ?
Project	Yes
<b>4.1 Building Systems Water Use Reduction</b>	<b>100%</b>
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?
Question	Criteria Achieved ?
Project	Yes

**Energy** Overall contribution 20% Minimum required 50%

Use the BESS Deem to Satisfy (DtS) method for Energy?:	Yes
Do all exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2019 insulation levels (total R-value upwards and downwards)?:	Yes
Does all wall and glazing demonstrate meeting the required NCC2019 facade calculator (or better than the total allowance)?:	Yes
Are heating and cooling systems within one Star of the most efficient equivalent capacity unit available, or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the CoP & EER of the most efficient equivalent capacity unit available?:	Yes
Are water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit?:	Yes
<b>Non-Residential Building Energy Profiles</b>	
Heating, Cooling & Comfort Ventilation - Electricity - reference fabric and reference services: All	-
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and reference services: All	-
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and proposed services: All	-
Heating - Wood - reference fabric and reference services: All	-
Heating - Wood - proposed fabric and reference services: All	-
Heating - Wood - proposed fabric and proposed services: All	-
Hot Water - Electricity - Baseline: All	-
Hot Water - Electricity - Proposed: All	-
Lighting - Baseline: All	-
Lighting - Proposed: All	-
Peak Thermal Cooling Load - Baseline: All	-
Peak Thermal Cooling Load - Proposed: All	-
<b>Solar Photovoltaic systems</b>	
System Size (lesser of inverter and panel capacity):	
PV	2.0 kW peak
pv	97.0 kW peak
Orientation (which way is the system facing)?:	
PV	North
pv	North
Inclination (angle from horizontal):	
PV	10.0 Angle (degrees)
pv	10.0 Angle (degrees)

Which Building Class does this apply to?:		
PV	Office	
pv	Lab/Warehouse	
<b>1.1 Thermal Performance Rating - Non-Residential</b>		37%
Score Contribution	This credit contributes 36.4% towards the category score.	
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2019 Section J)?	
<b>2.1 Greenhouse Gas Emissions</b>		100%
Score Contribution	This credit contributes 9.1% towards the category score.	
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?	
<b>2.2 Peak Demand</b>		100%
Score Contribution	This credit contributes 4.5% towards the category score.	
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?	
<b>2.3 Electricity Consumption</b>		100%
Score Contribution	This credit contributes 9.1% towards the category score.	
Criteria	What is the % reduction in annual electricity consumption against the benchmark?	
<b>2.4 Gas Consumption</b>		N/A  Scoped Out
This credit was scoped out	No gas connection in use	
<b>2.6 Electrification</b>		100%
Score Contribution	This credit contributes 9.1% towards the category score.	
Criteria	Is the development all-electric?	
Question	Criteria Achieved?	
Project	Yes	
<b>3.1 Carpark Ventilation</b>		100%
Score Contribution	This credit contributes 9.1% towards the category score.	
Criteria	If you have an enclosed carpark, is it: (a) fully naturally ventilated (no mechanical ventilation system) or (b) 40 car spaces or less with Carbon Monoxide monitoring to control the operation and speed of the ventilation fans?	
Question	Criteria Achieved ?	
Project	Yes	
<b>3.2 Hot Water</b>		100%
Score Contribution	This credit contributes 4.5% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?	

<b>3.7 Internal Lighting - Non-Residential</b>	100%
Score Contribution	This credit contributes 9.1% towards the category score.
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J6.2a of the NCC 2019 Vol 1?
Question	Criteria Achieved ?
Office	Yes
Lab/Warehouse	Yes
<b>4.1 Combined Heat and Power (cogeneration / trigeneration)</b>	N/A  Scoped Out
This credit was scoped out	No cogeneration or trigeneration system in use.
<b>4.2 Renewable Energy Systems - Solar</b>	100%
Score Contribution	This credit contributes 4.5% towards the category score.
Criteria	What % of the estimated energy consumption of the building class it supplies does the solar power system provide?
Output	Solar Power - Energy Generation per year
Office	2,424 kWh
Lab/Warehouse	117,548 kWh
Output	% of Building's Energy
Office	11 %
Lab/Warehouse	5 %
<b>4.4 Renewable Energy Systems - Other</b>	0%  Disabled
This credit is disabled	No other (non-solar PV) renewable energy is in use.

## Stormwater Overall contribution 14% Minimum required 100%

Which stormwater modelling are you using?:	MUSIC or other modelling software
<b>1.1 Stormwater Treatment</b>	100%
Score Contribution	This credit contributes 100.0% towards the category score.
Criteria	Has best practice stormwater management been demonstrated?
Question	Flow (ML/year)
Project	1.3 % Reduction
Question	Total Suspended Solids (kg/year)
Project	81.3 % Reduction
Question	Total Phosphorus (kg/year)
Project	60.6 % Reduction
Question	Total Nitrogen (kg/year)
Project	50.0 % Reduction

**IEQ** Overall contribution 10% Minimum required 50%

<b>1.4 Daylight Access - Non-Residential</b>		37%	✓ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.		
Criteria	What % of the nominated floor area has at least 2% daylight factor?		
Question	Percentage Achieved?		
Office	37 %		
Lab/Warehouse	37 %		
<b>2.3 Ventilation - Non-Residential</b>		66%	✓ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.		
Criteria	What % of the regular use areas are effectively naturally ventilated?		
Question	Percentage Achieved?		
Office	-		
Lab/Warehouse	0 %		
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?		
Question	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668:2012?		
Office	50 %		
Lab/Warehouse	50 %		
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?		
Question	Value		
Office	800 ppm		
Lab/Warehouse	800 ppm		
<b>3.4 Thermal comfort - Shading - Non-residential</b>		92%	
Score Contribution	This credit contributes 17.6% towards the category score.		
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?		
Question	Percentage Achieved?		
Office	-		
Lab/Warehouse	100 %		
<b>3.5 Thermal Comfort - Ceiling Fans - Non-Residential</b>		0%	
Score Contribution	This credit contributes 5.9% towards the category score.		
Criteria	What percentage of regular use areas in tenancies have ceiling fans?		
Question	Percentage Achieved?		
Office	-		
Lab/Warehouse	0 %		
<b>4.1 Air Quality - Non-Residential</b>		100%	
Score Contribution	This credit contributes 5.9% towards the category score.		

Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Office	Yes
Lab/Warehouse	Yes
Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Office	Yes
Lab/Warehouse	Yes
Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Office	Yes
Lab/Warehouse	Yes

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**Transport** Overall contribution 3%

<b>1.4 Bicycle Parking - Non-Residential</b>		0%
Score Contribution	This credit contributes 25.0% towards the category score.	
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Office	No	
Lab/Warehouse	No	
Question	Bicycle Spaces Provided ?	
Office	-	
Lab/Warehouse	0	
<b>1.5 Bicycle Parking - Non-Residential Visitor</b>		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Office	No	
Lab/Warehouse	No	
Question	Bicycle Spaces Provided ?	
Office	-	
Lab/Warehouse	-	
<b>1.6 End of Trip Facilities - Non-Residential</b>		0% <input checked="" type="checkbox"/> Disabled
This credit is disabled	Credit 1.4 must be complete first.	
<b>2.1 Electric Vehicle Infrastructure</b>		100%
Score Contribution	This credit contributes 25.0% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	Yes	
<b>2.2 Car Share Scheme</b>		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Has a formal car sharing scheme been integrated into the development?	
Question	Criteria Achieved ?	
Project	No	
<b>2.3 Motorbikes / Mopeds</b>		100%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?	
Question	Criteria Achieved ?	
Project	Yes	

**Waste** Overall contribution 2%

<b>1.1 - Construction Waste - Building Re-Use</b>		0%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?	
Question	Criteria Achieved ?	
Project	No	
<b>2.1 - Operational Waste - Food &amp; Garden Waste</b>		0%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are facilities provided for on-site management of food and garden waste?	
Question	Criteria Achieved ?	
Project	No	
<b>2.2 - Operational Waste - Convenience of Recycling</b>		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are the recycling facilities at least as convenient for occupants as facilities for general waste?	
Question	Criteria Achieved ?	
Project	Yes	

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**Urban Ecology** Overall contribution 1%

<b>1.1 Communal Spaces</b>	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Is there at least the following amount of common space measured in square meters : * 1m <sup>2</sup> for each of the first 50 occupants * Additional 0.5m <sup>2</sup> for each occupant between 51 and 250 * Additional 0.25m <sup>2</sup> for each occupant above 251?
Question	Common space provided
Office	-
Lab/Warehouse	-
Output	Minimum Common Space Required
Office	256 m <sup>2</sup>
Lab/Warehouse	1081 m <sup>2</sup>
<b>2.1 Vegetation</b>	25%
Score Contribution	This credit contributes 50.0% towards the category score.
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?
Question	Percentage Achieved ?
Project	8 %
<b>2.2 Green Roofs</b>	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Does the development incorporate a green roof?
Question	Criteria Achieved ?
Project	No
<b>2.3 Green Walls and Facades</b>	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Does the development incorporate a green wall or green façade?
Question	Criteria Achieved ?
Project	No
<b>3.2 Food Production - Non-Residential</b>	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	What area of space per occupant is dedicated to food production?
Question	Food Production Area
Office	-
Lab/Warehouse	-
Output	Min Food Production Area
Office	119 m <sup>2</sup>
Lab/Warehouse	944 m <sup>2</sup>

**Innovation** Overall contribution 0%

<b>1.1 Innovation</b>	0%
Score Contribution	This credit contributes 100.0% towards the category score.
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?

**Note**

This is a DRAFT and not suitable for submission to council.

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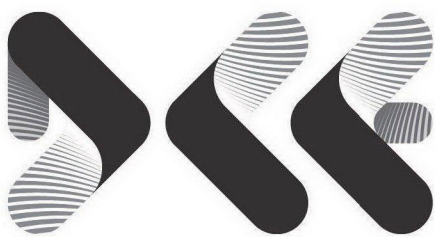
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# DRAFT



# **Appendix B**

# **Stormwater Management Plan**



**DALTON  
CONSULTING  
ENGINEERS**

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# **Stage 1, Axxess Corporate Park, Mount Waverley**

## **STORMWATER MANAGEMENT STRATEGY**

September 2022

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**DCE Ref: 22058**

**FOR**

**dexus**

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# Disclaimer

## Dalton Consulting Engineers Pty Ltd

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<b>Prepared:</b>	
	S Khaji AN: 3701045
<b>Reviewed:</b>	
	J Baumann AN: 401284
<b>Approved:</b>	
	T Liakopoulos AN: 889478

## Executive Summary

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This report outlines the stormwater drainage and management strategy for the development of Stage 1, comprising Lots 1 and 2 at 170 Forster Road, Mount Waverley.

Stage 1, the subject site, is located within the City of Monash and will be developed such that the City of Monash and Melbourne Water stormwater requirements are achieved. The proposed development will comprise industrial and commercial development.

Underground drainage within the proposed development will be designed to convey minor event flows up to and including the 10% Annual Exceedance Probability (AEP) flows in accordance with council requirements.

For major events, defined as flows greater than the 10% AEP event, up to and including the 1% AEP, safe overland flow paths will be provided to direct stormwater to adjacent roads.

The City of Monash has advised that no detention or contribution is required owing to the site being in an existing industrial area. City of Monash correspondence is included in Appendix A.

Stormwater quality treatment will be provided to ensure that stormwater is treated to best practice environmental management (BPEM) targets prior to leaving the site.

Consideration needs to be given to the fact that as there are multiple land parcels within the subject site, they may be subject to individual requirements for legal points of discharge and stormwater treatment. Stormwater management at the subject site will be undertaken in a way that corresponds with the planning and future development of other stages of development.



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# 1. Introduction

---

This report presents the stormwater drainage and management strategy for the proposed development of the subject site, Stage 1 of Axxess Corporate Park. Stage 1 comprises proposed lots 1 and 2. The subject site is located within Mount Waverley, comprises approximately 6 ha and is located within the City of Monash.

The subject site is currently zoned for industrial use. Industrial/commercial development exists at the subject site in the existing condition. The proposed development will also be industrial/commercial land use. Figure 1 shows the subject site in the existing condition.

The subject site comprises 6 ha and slopes generally towards the north-west to Forster Road. This stormwater management strategy will demonstrate that the subject site can appropriately manage stormwater in the developed condition and accommodate all required infrastructure.

The subject site is part of the Axxess Corporate Park development. A stormwater management strategy (SWMS) for the entire development has been prepared by DCE. 22058jul0422-SWMS Rev A (DCE, 2022) has been submitted to Council.

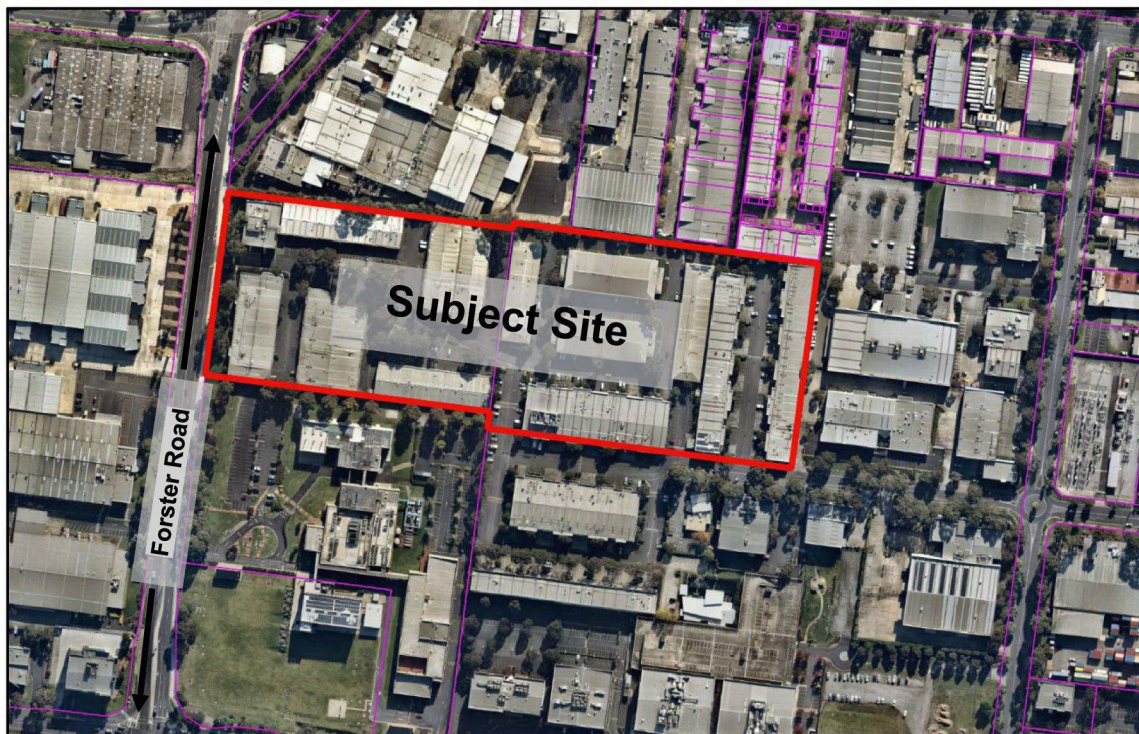


Figure 1: Subject site in the existing condition

## 2. Site Overview

### 2.1. Existing condition

In the existing condition, the subject site land use is industrial. Publicly available elevation contours indicates that the subject site drains north-west to Forster Road. Figure 2 shows the subject site topography.

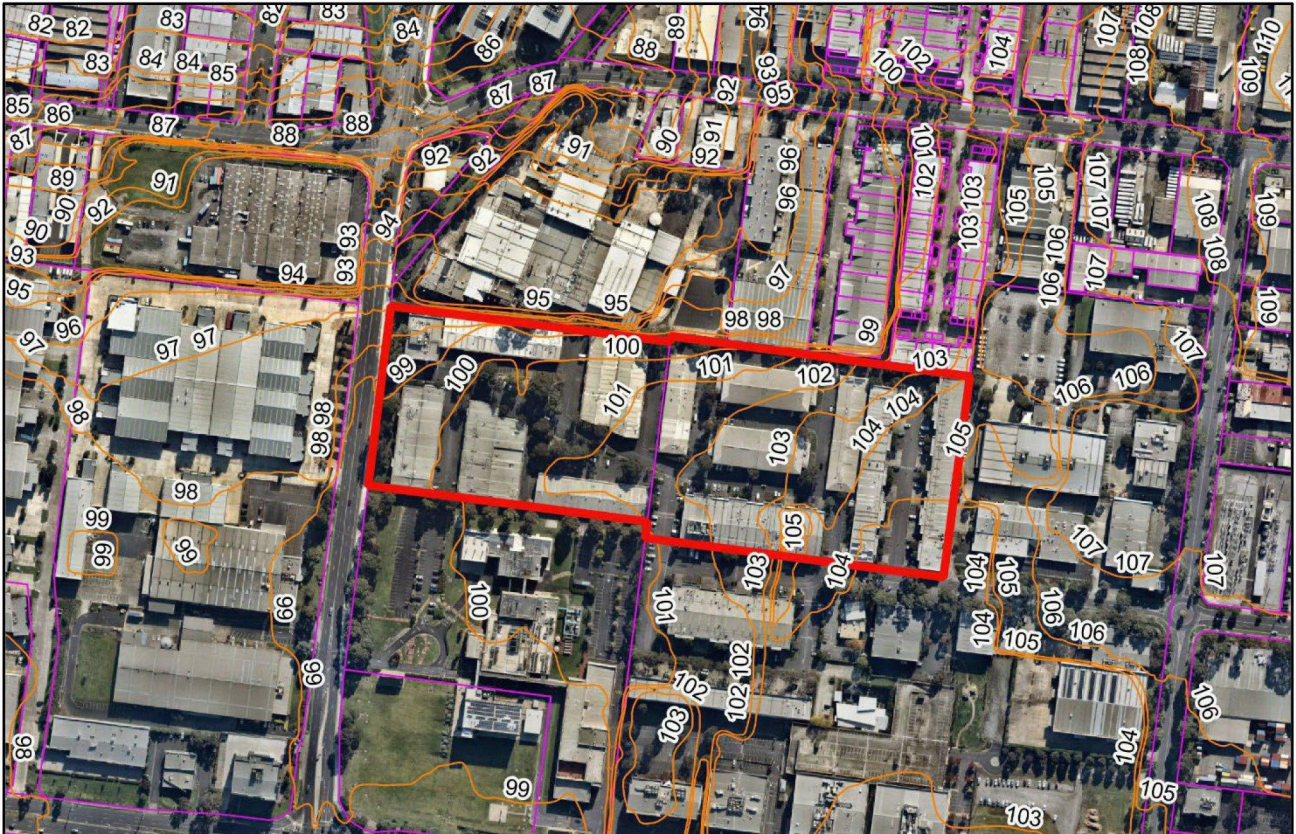


Figure 2: Subject site topography

A Before-You-Dig enquiry has indicated that there is existing Council infrastructure within the Forster Road adjacent to the subject site. Figure 3 shows the location of the existing council underground drainage infrastructure. Complete Council drainage plans are included in Appendix A.

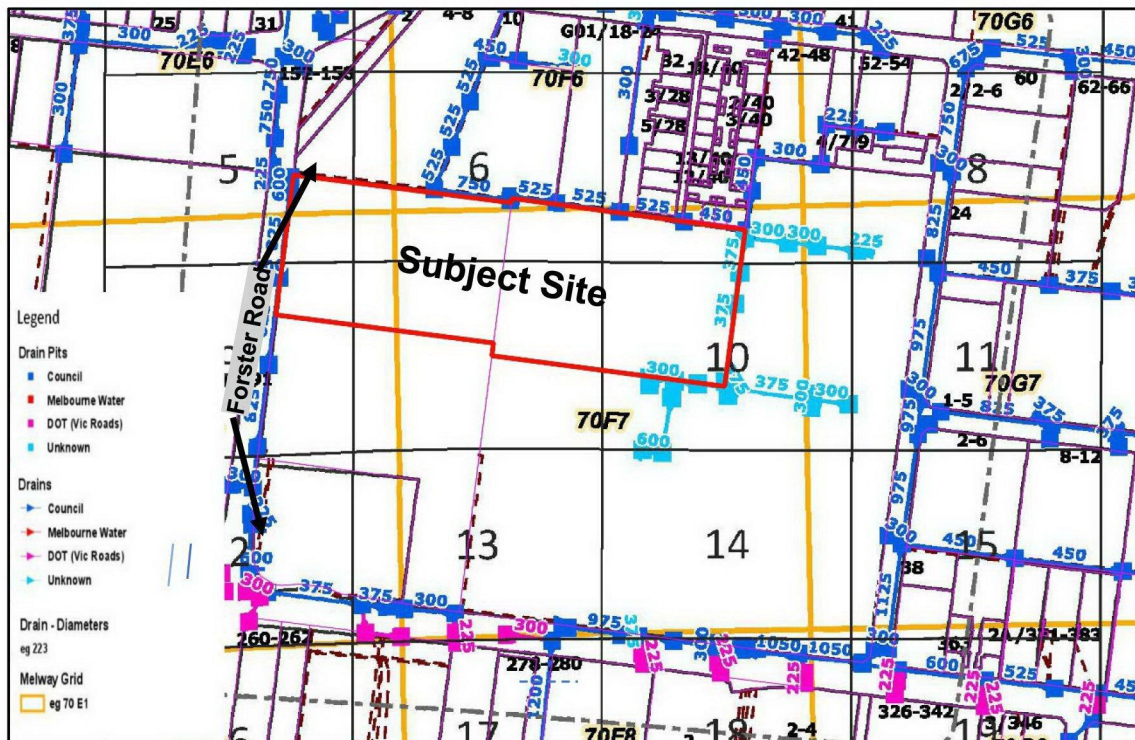


Figure 3: Subject site and Council drainage assets

During detailed design, it will need to be assessed if the existing Council infrastructure within the site can be retained or if it will need to be decommissioned. Since the site is currently used for industrial purposes, it is likely that there is existing underground drainage within the subject site that is not indicated in the BYD, and that these have been sized to cater for minor flows up to the 10% AEP. It is also expected that existing roads and other overland flow paths have been sized to convey the gap flows (i.e., 1% AEP – 10% AEP flows)

In the existing condition, the site generally slopes to the north-west. The BYD information indicates that there is an existing Council underground drain at the north-west of the subject site. The existing 825-mm diameter stormwater pipe on Forster Road is the assumed Legal Point of Discharge for the site. This will need to be confirmed with the City of Monash. Existing flows have been calculated for the entire subject site at a single outlet at the north-west boundary of the subject site. Figure 4 shows the existing catchment and the location of peak flow calculations.



**Figure 4: Existing catchment plan showing location of peak flow calculation**

Existing condition flows for the subject site have been calculated and are shown in Table 1. Details of the drainage calculations are included as Appendix B.

**Table 1: Existing flows at the subject site**

<b>Catchment</b>	<b>10% AEP flow (m<sup>3</sup>/s)</b>	<b>1% AEP flow (m<sup>3</sup>/s)</b>
<b>Subject Site</b>	0.78	1.74

## 2.2. Development Plan

The development plan for the subject site incorporates industrial lots and an internal road. Figure 5 shows the development plan for the subject site. A full-size development plan is included as Appendix C.

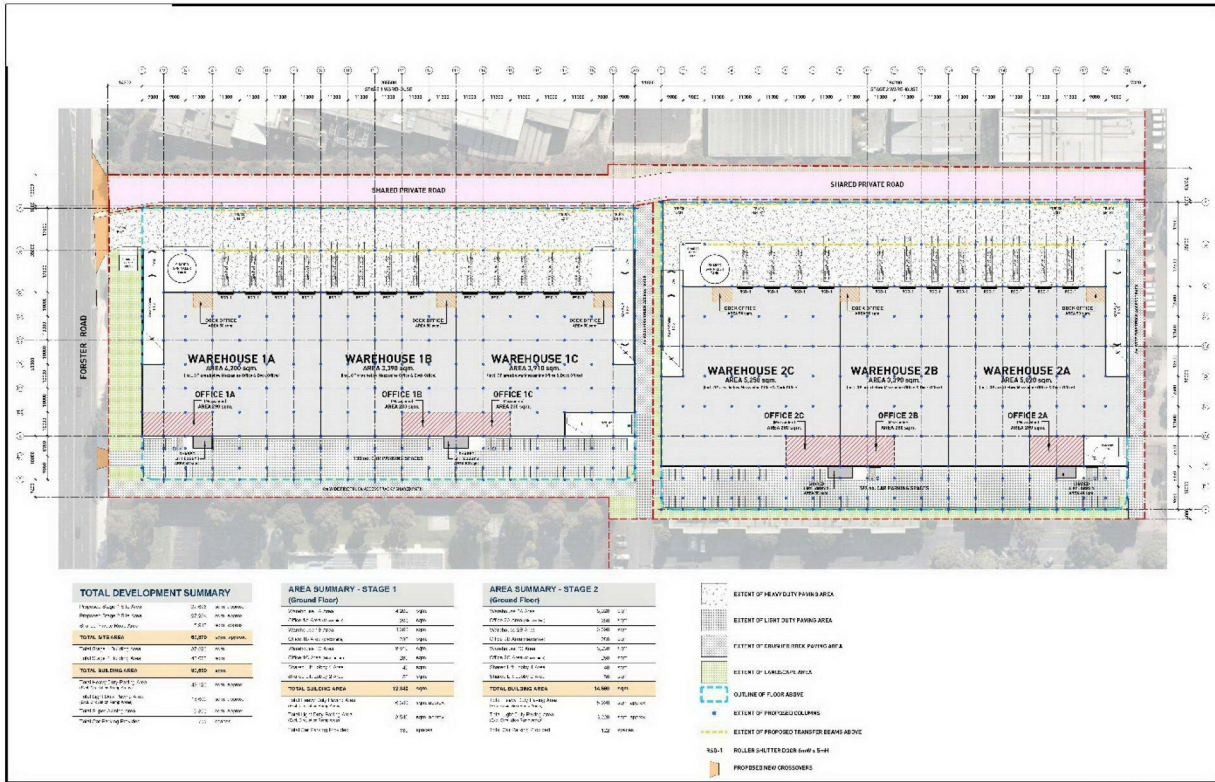


Figure 5: Development plan

## 3. Stormwater Management

---

The subject site is located within the City of Monash and is subject to Council stormwater guidelines. Major and minor flows have been calculated for both existing and developed conditions for the development. Flows have been calculated based on the City of Monash stormwater guidelines.

All flow calculations have been completed using the Rational Method, reflecting industry best practice and in accordance with Australian Rainfall and Runoff (2019) (ARR19) guidance.

### 3.1. Proposed Development Condition

In the developed condition, the subject site is to remain as an industrial use in the proposed development. A full-size plan of the proposed development is included as Appendix C.

As the subject site is proposed to be developed for industrial use, minor internal drainage will be sized to cater for the 10% Annual Exceedance Probability (AEP). Minor drainage from the subject site will be conveyed to existing Council drainage at the north-western boundary of the subject site.

Major overland flow paths will be sized to direct flows in excess of the capacity of the minor drainage to existing overland flow paths within the existing access road. Stormwater drainage will be managed as part of the development.

Design of underground drainage and overland flow paths within the subject site will cater for external flows from other stages of the Axxess Corporate Park development. This report defines minor flows as stormwater flows up to and including the 10% AEP Annual Exceedance Probability (AEP). Major flows are defined as greater than the 10% AEP flow up to and including the 1% AEP flow. All calculations and drainage design in this report are compliant with ARR19 methodology and reflect industry Best Practice approaches.



Figure 6: Developed catchment plan showing location of peak flow calculation.

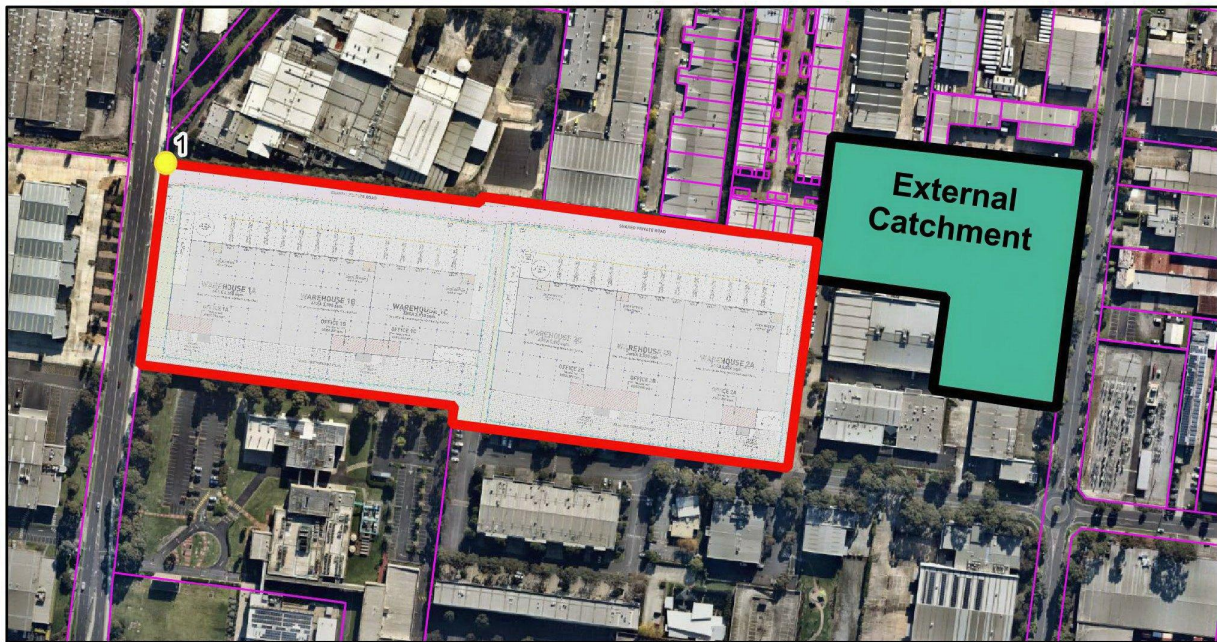


Figure 7: Developed catchment plan showing the external catchment

### 3.2. Minor Event Flows

Minor event flows will be managed within the development prior to discharge to existing Council drainage. Minor flows, up to and including the 10% AEP event will be directed to existing Council drainage assets at the north-western boundary of the subject site. This report defines minor event flows for industrial developments as 10% AEP flows. Complete drainage calculations are included in Appendix B.



The minor drainage system will be designed to control stormwater flows under normal operating conditions and minor rainfall events. The exact configuration of the minor drainage system will be determined during detailed design. The flows presented in this report will be refined during detailed design.

### 3.2.1. Minor Flow Calculation

Minor peak 10% AEP developed flow is shown in Table 2.

**Table 2: Developed minor flows**

Catchment	Location	10% AEP flow (m <sup>3</sup> /s)
Subject Site	1	0.8
Subject Site and External Catchment	1	1.1

### 3.2.2. Management of Minor Flows

Minor flows will be managed at the precinct level. Minor drainage for each lot will connect to underground drainage within the proposed road and then to existing Council drainage at the north-western boundary of the subject site.

As part of the proposed development works, Dexu have noted that they wish to make provision to subdivide Lots 1 & 2 in the future. In order to subdivide the lots in the future, each lot must be individually serviced and have its own legal point of discharge. As a result, it is likely that a drainage easement will be required through either Lot 1 or along the private road to ensure that a discharge point is created for Lot 2.

Further advice should be sought from a relevant town planner and licensed surveyor. Stormwater quality treatment and on-site detention will be provided for the subject site prior to discharge to Council assets. Stormwater quality treatment is detailed in Section 4. Figure 8 shows indicative minor event flow paths and the direction of flow.

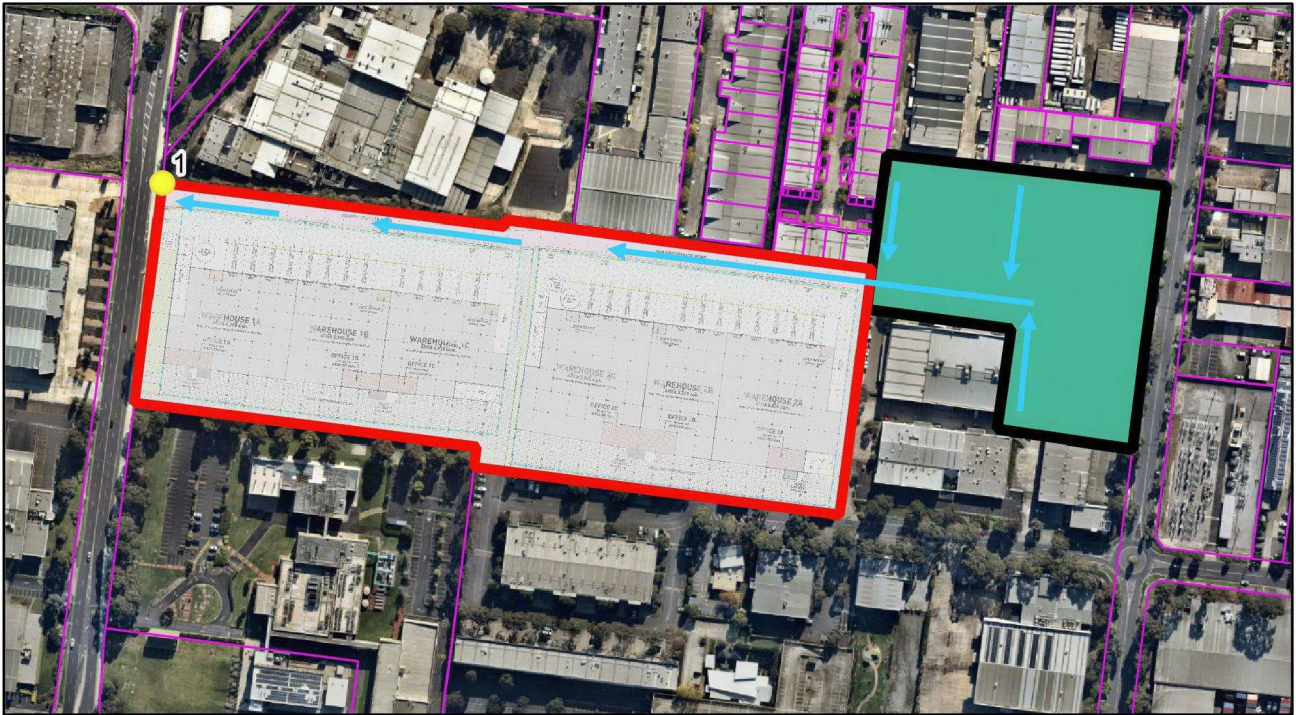


Figure 8: Indicative minor flow paths and directions

### 3.3. Major Event Flows

Major flows, greater than the 10% AEP and up to and including the 1% AEP, will be conveyed safely overland through the subject site, ensuring no damage to property or risk to people.

#### 3.3.1. Major Event Flow Calculations

Major flows from the subject site will be conveyed safely through the subject site to Forster Road. The 1% AEP developed flow is shown in Table 3. Complete drainage calculations are included in Appendix B.

Table 3: Developed major flows

Catchment	Location	1% AEP flow (m <sup>3</sup> /s)
Subject Site	1	1.7
Subject Site and External Catchment	1	2.4

#### 3.3.2. Management of Major Flows

Major event flows will be conveyed safely overland via the proposed internal road network to Forster Road. The overland flow paths within the subject site will be designed such that Melbourne Water's Guidelines for Development in Flood-prone Areas (Melbourne Water, 2007) criteria for safe overland

flow depth ( $< 0.35$  m), velocity ( $< 1.5$  m/s), and depth x velocity ( $< 0.35$  m<sup>2</sup>/s) criteria are met. The design of the development will ensure sufficient protection from 1% AEP flows to finished floor levels.

Figure 6 shows indicative major event flow paths. The direction of flow is also noted.

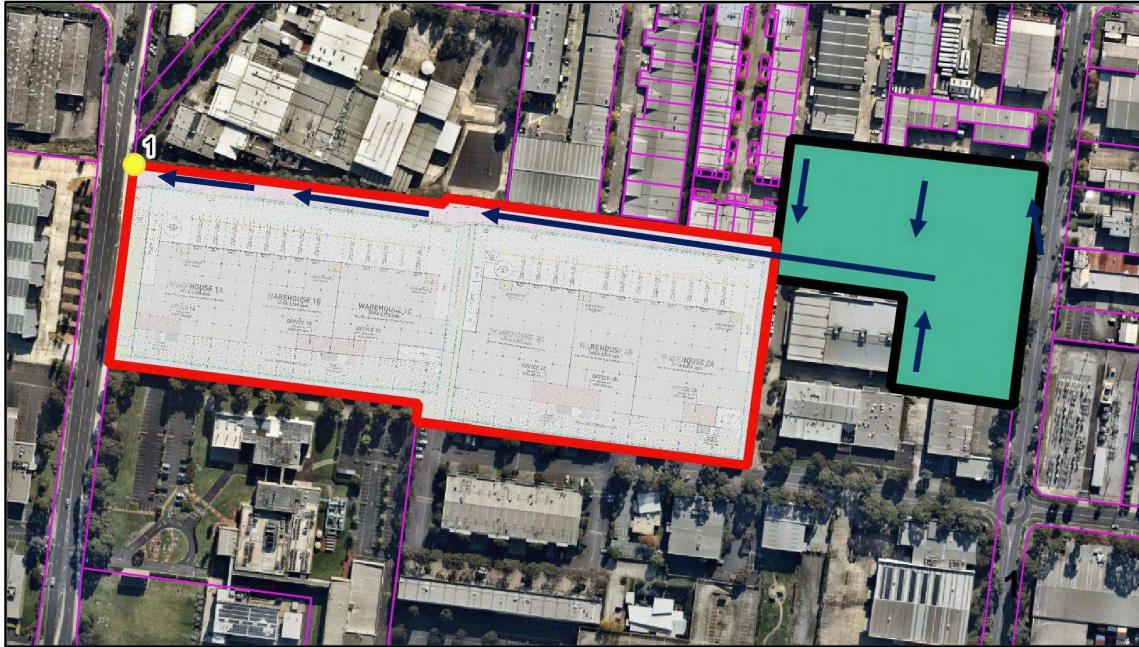


Figure 9: Indicative major flow paths and direction

### 3.4. Rare Event Flows (0.2% AEP)

During development of the SWMS for the subject site, DCE was asked to consider management of rare event (0.2% AEP or 1-in-500) flows. Rare event flows will be used to inform finished floor levels to ensure adequate protection to properties in rare events.

As shown in Table 4, rare event flows for the subject site and external catchment (Axxess Corporate Park Catchment A) have been calculated. The rare event flows will inform the civil design of the proposed internal road and will be used to set finished floor levels.

Table 4: Developed rare (1-in-500) flows

Catchment	Location	0.2% AEP (1-in-500) flow (m <sup>3</sup> /s)
Subject Site	1	2.711
Subject Site and External Catchment	1	3.644

### **3.5. On-site Detention (OSD)**

The City of Monash has advised that on-site detention (OSD) does not need to be provided. The site is currently used for industrial use, and it will be redeveloped for industrial use. City of Monash correspondence is included in Appendix A.

### **3.6. External Catchments**

As shown in Figure 7, the subject site is part of Axxess Corporate Park Catchment A. Provision for minor, major, and rare flows from the remainder of Catchment A has been made within the subject site. Minor underground drainage and overland flow paths will be designed to convey complete Catchment A flows.

## 4. Stormwater Quality Treatment

The subject site is proposed to be developed for industrial use. Stormwater quality treatment is required to treat flows to Best Practice Environmental Management (BPEM) standards. The stormwater quality treatment satisfies planning requirements for stormwater quality treatment.

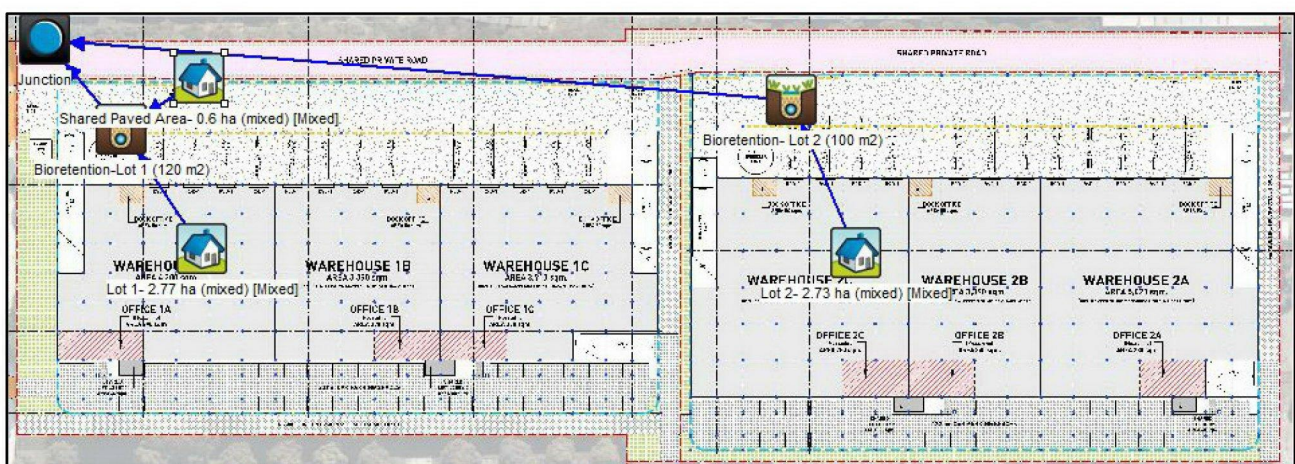
Two raingardens (bioretention systems) will be used to treat runoff from all areas of the subject site. The raingardens have been sized using MUSIC modelling. The complete MUSIC model is available upon request as an electronic attachment to this report. The MUSIC model inputs and results are included in Appendix E.

Figure 10 shows the MUSIC model schematic and the proposed locations of the raingardens. Note that the development plan of the subject site will be updated to allocate area for the raingardens. The indicative location and size of each raingarden is shown in Figure 11. Figure 12 shows an example of a similar raingarden within an industrial development. Table 5 shows the required size of the raingardens for the proposed development.

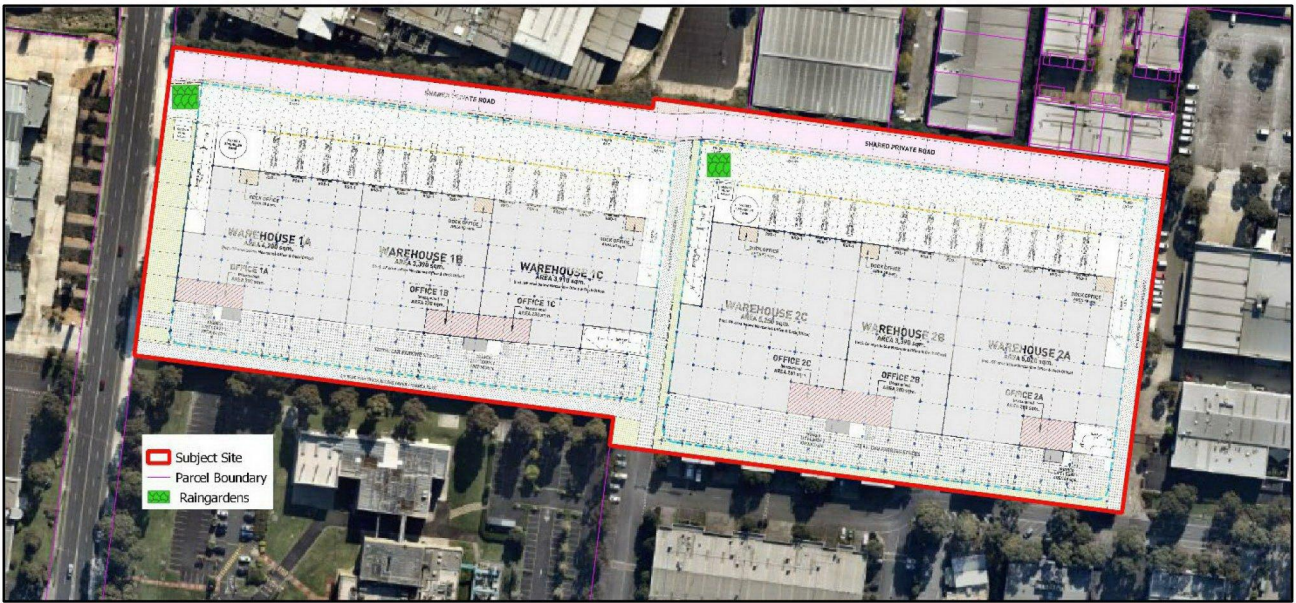
**Table 5: Raingardens Treatment Effectiveness and Size**

Catchment	Total Suspended Solids (% Reduction)	Total Phosphorus (% Reduction)	Total Nitrogen (% Reduction)	Gross Pollutants (% Reduction)	Raingarden Area (m <sup>2</sup> )
Lot 1 and internal road	80.8	60.8	50.1	100	120
Lot 2	81.6	60.9	50.4	100	100

Downspouts can direct roof runoff overland to the respective inlets of the proposed raingardens. The grading of carparks and other hardstand area will also direct runoff to raingardens. Raingardens will be designed to ensure that flows in excess of the treatment capacity of the raingardens are captured by underground drainage prior to discharge to the Council drainage network.



**Figure 10: MUSIC Model Schematic**



**Figure 11: Indicative location and size of each raingarden**



**Figure 12: Example of Raingarden in An Industrial Development**

## 5. Conclusion

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This report outlines the stormwater drainage and management strategy for the proposed development of the subject site, Stage 1, Lots 1 and 2, of the Axxess Corporate Park, located at 170 Forster Road, Mount Waverley. The subject site will comprise approximately 6 ha of industrial development.

In minor events, up to and including the 10% AEP event, stormwater will be directed to existing Council underground drainage assets at the north-western boundary of the subject site. Council guidelines define minor event flows for industrial developments as being 10% AEP flows.

In major events (greater than the 10% AEP and up to and including the 1% AEP), overland flow will be conveyed safely overland through the subject site, ensuring no damage to property or risk to people.

All overland flow paths will be sized during detailed design to ensure appropriate protection is provided to the development's finished floor levels.

Stormwater quality treatment will be provided for the subject site. It is provided that raingardens be used to treat stormwater from the subject site.

Consideration needs to be given to the fact that as there are multiple land parcels within the subject site, they may be subject to individual requirements for legal points of discharge and stormwater treatment. This SWMS for Stage 1, comprising Lots 1 and 2, allows for overland (major) and underground (minor) flows from Axxess Corporate Park Catchment A to be safely conveyed through the subject site.

This strategy presents a concept drainage design and may be refined during detailed design.

## **Appendices**

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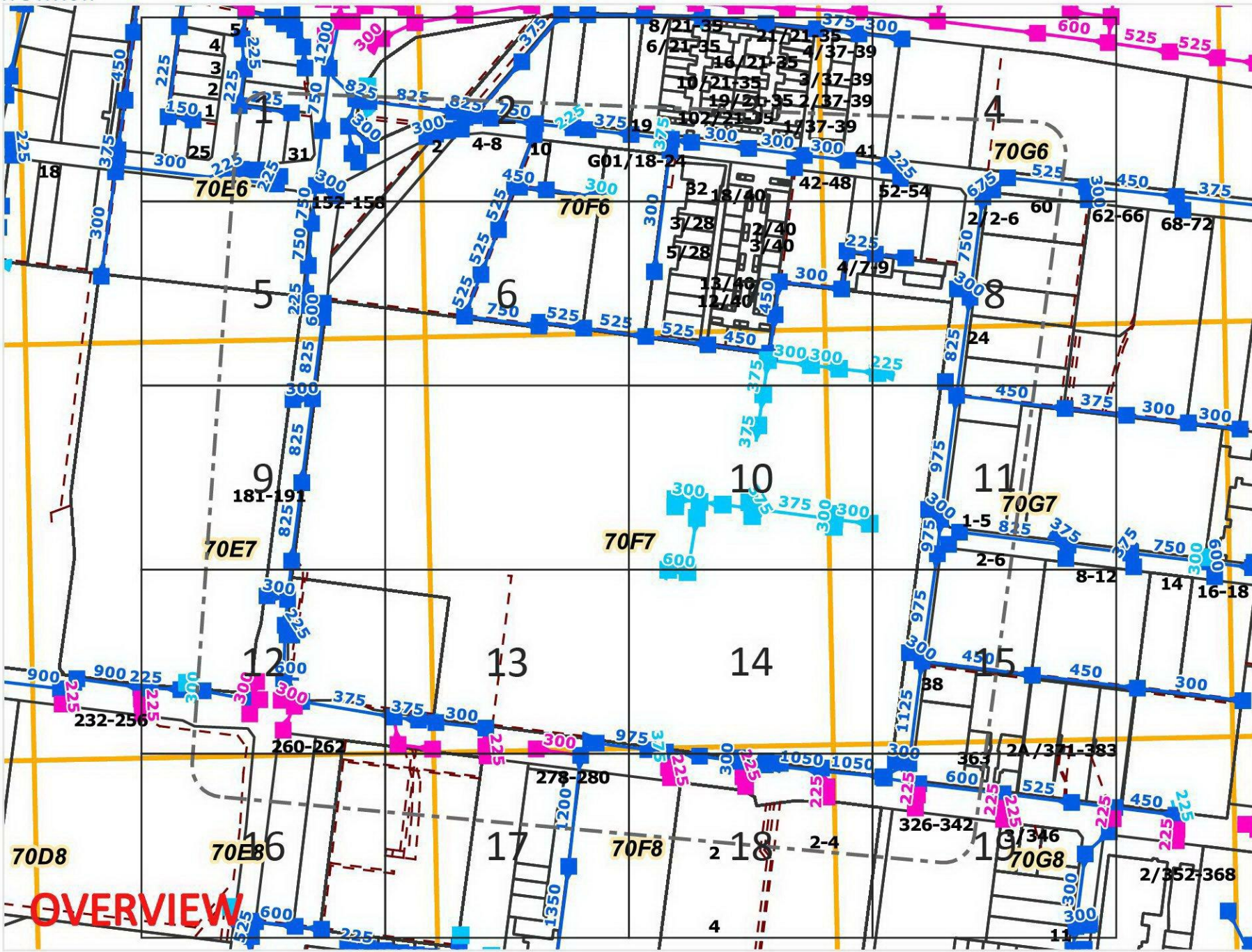




## **Appendix A: Monash City Council Assets and Correspondence**



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149



Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

**Drain - Diameters**  
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**Melway Grid**  
eg 70 E1

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OVERVIEW



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

Legend

Drain Pits

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

Drains

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

Drain - Diameters  
eg 223

Melway Grid  
eg 70 E1

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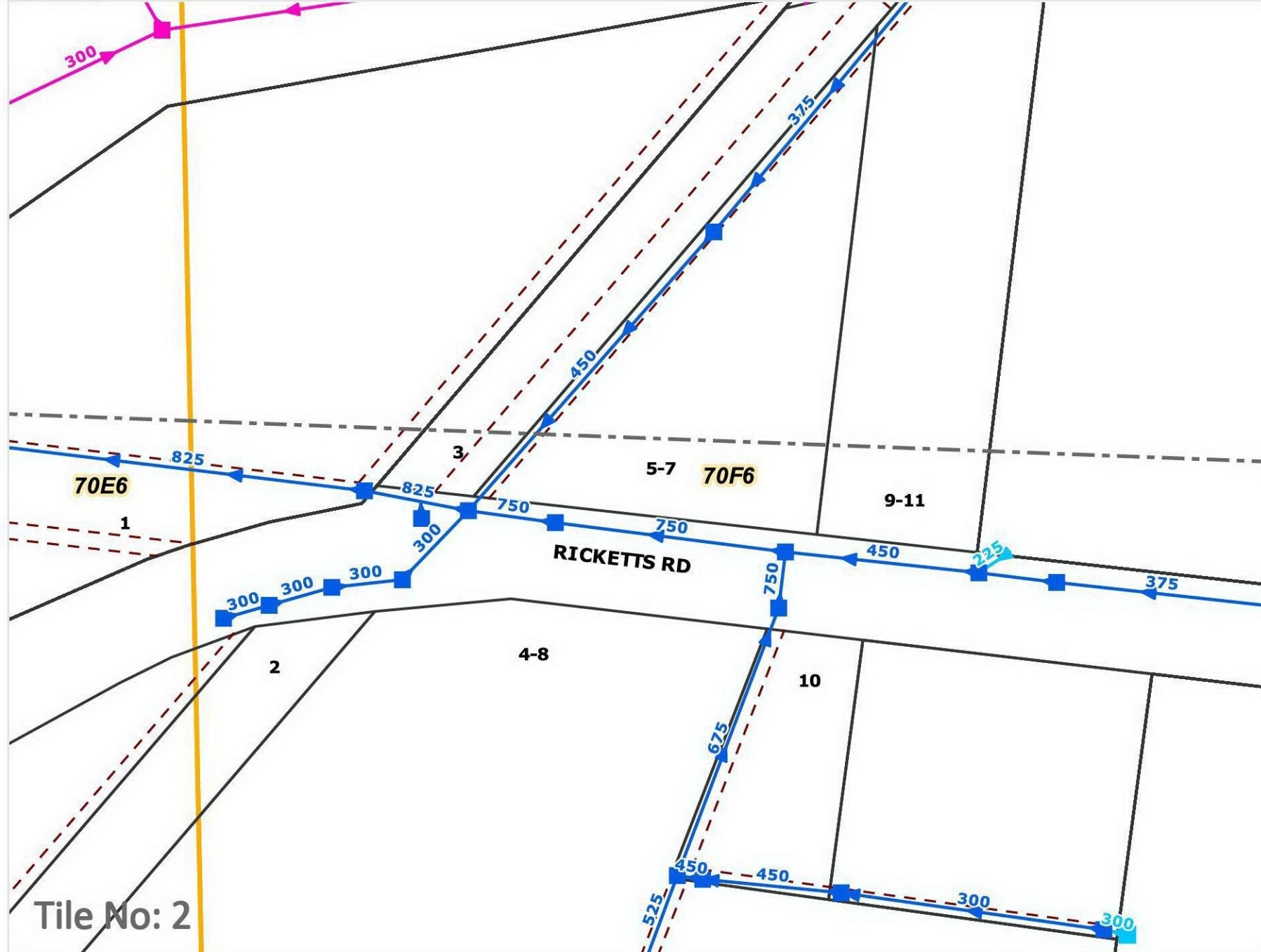
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Tile No: 1



Legend

Drain Pits

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

Drains

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

Drain - Diameters

eg 223

Melway Grid

eg 70 E1

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Tile No: 2



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149



Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

Drain - Diameters  
eg 223

Melway Grid  
eg 70 E1

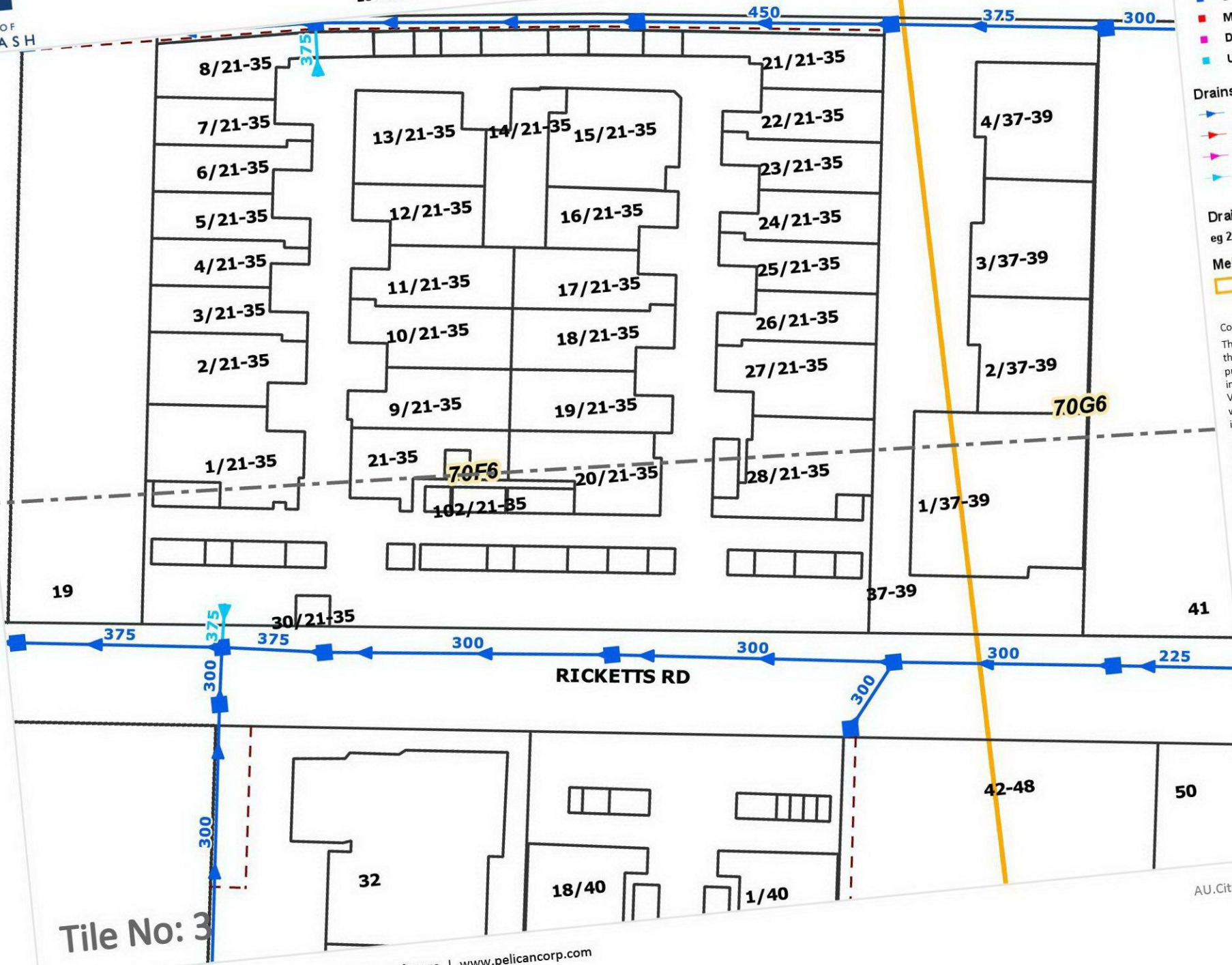
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Tile No: 3



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

### MONASH FREEWAY

#### Legend

##### Drain Pits

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

##### Drains

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

##### Drain - Diameters

eg 223

##### Melway Grid

eg 70 E1

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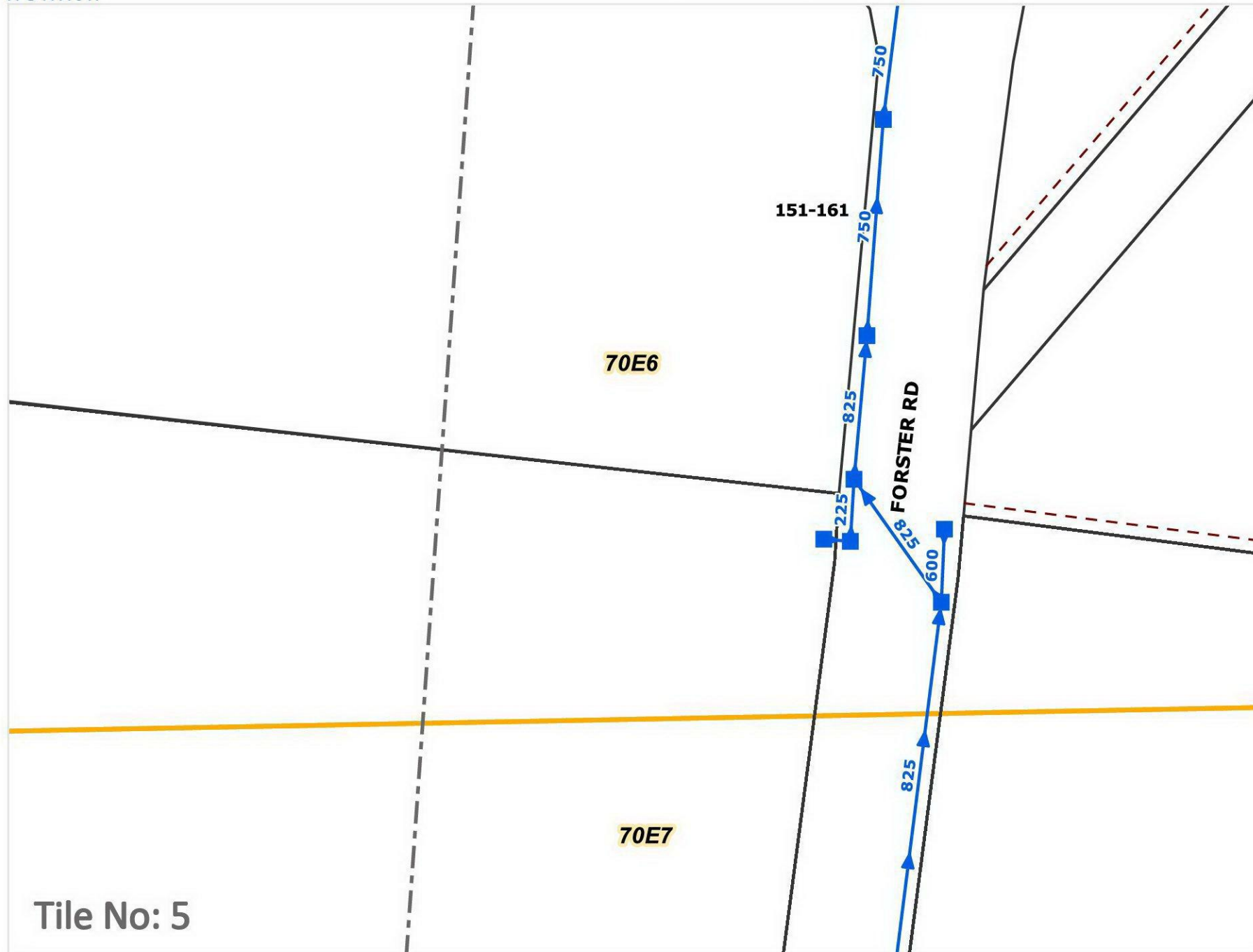
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Tile No: 4



Legend

Drain Pits

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

Drains

- ▶ Council
- ▶ Melbourne Water
- ▶ DOT (Vic Roads)
- ▶ Unknown

Drain - Diameters

eg 223

Melway Grid

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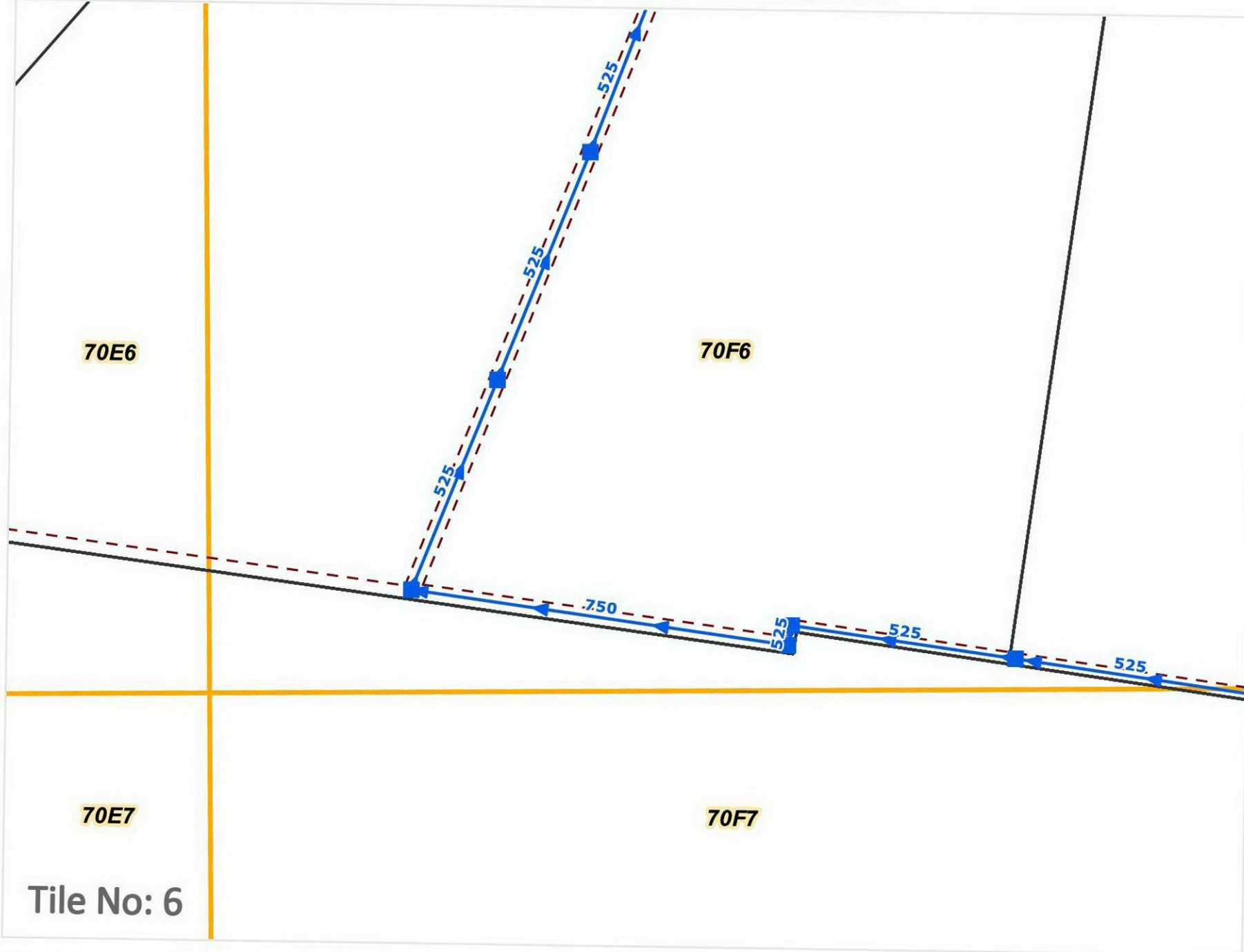
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Tile No: 5



Legend

Drain Pits

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- Melbourne Water
- DOT (Vic Roads)
- Unknown

Drains

- ▶ Council
- ▶ Melbourne Water
- ▶ DOT (Vic Roads)
- ▶ Unknown

Drain - Diameters

eg 223

Melway Grid

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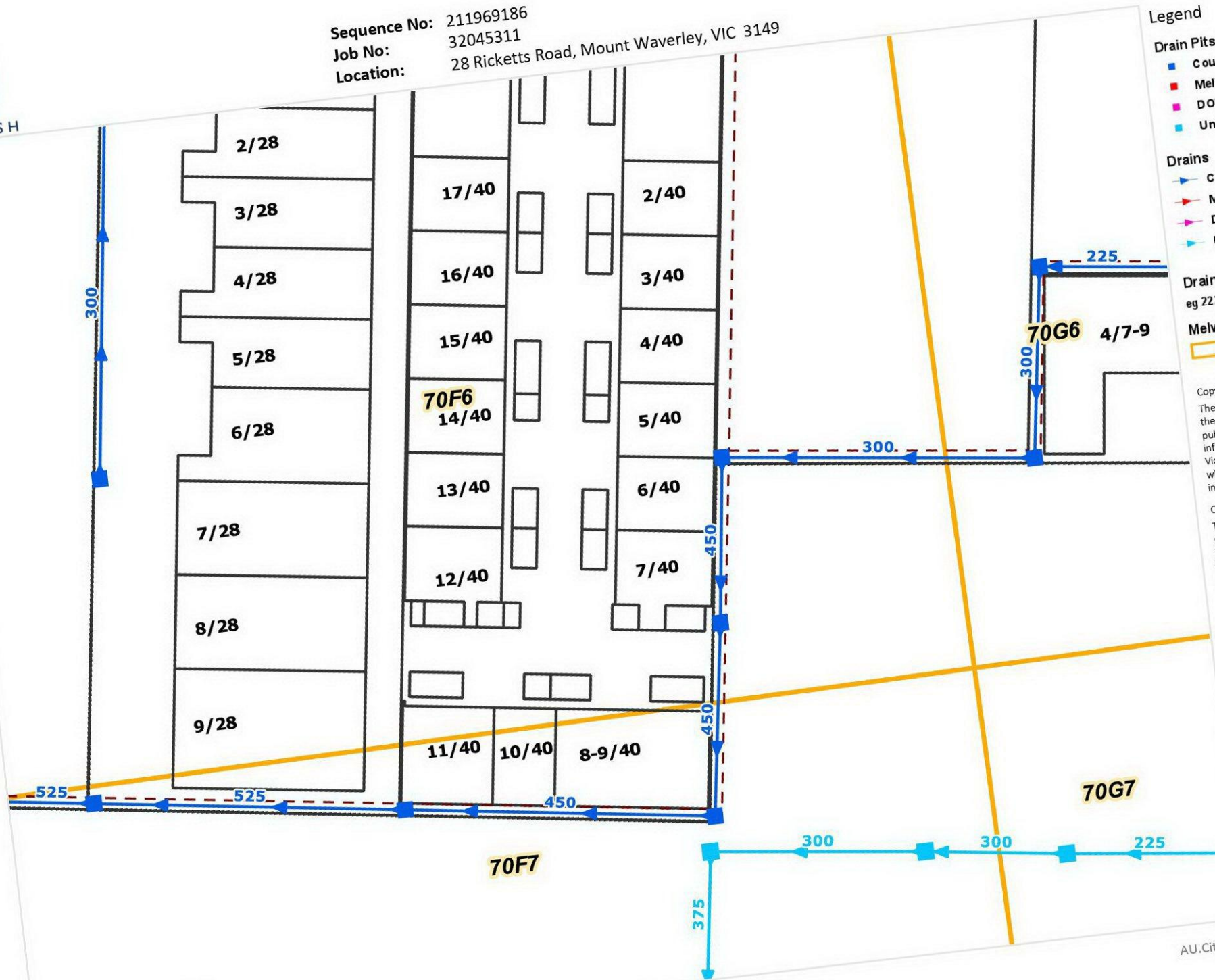
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Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149



Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

Drain - Diameters  
eg 223

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Tile No: 7



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

Legend

- Drain Pits**
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  - DOT (Vic Roads)
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  - DOT (Vic Roads)
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**Drain - Diameters**  
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**Melway Grid**  
eg 70 E1

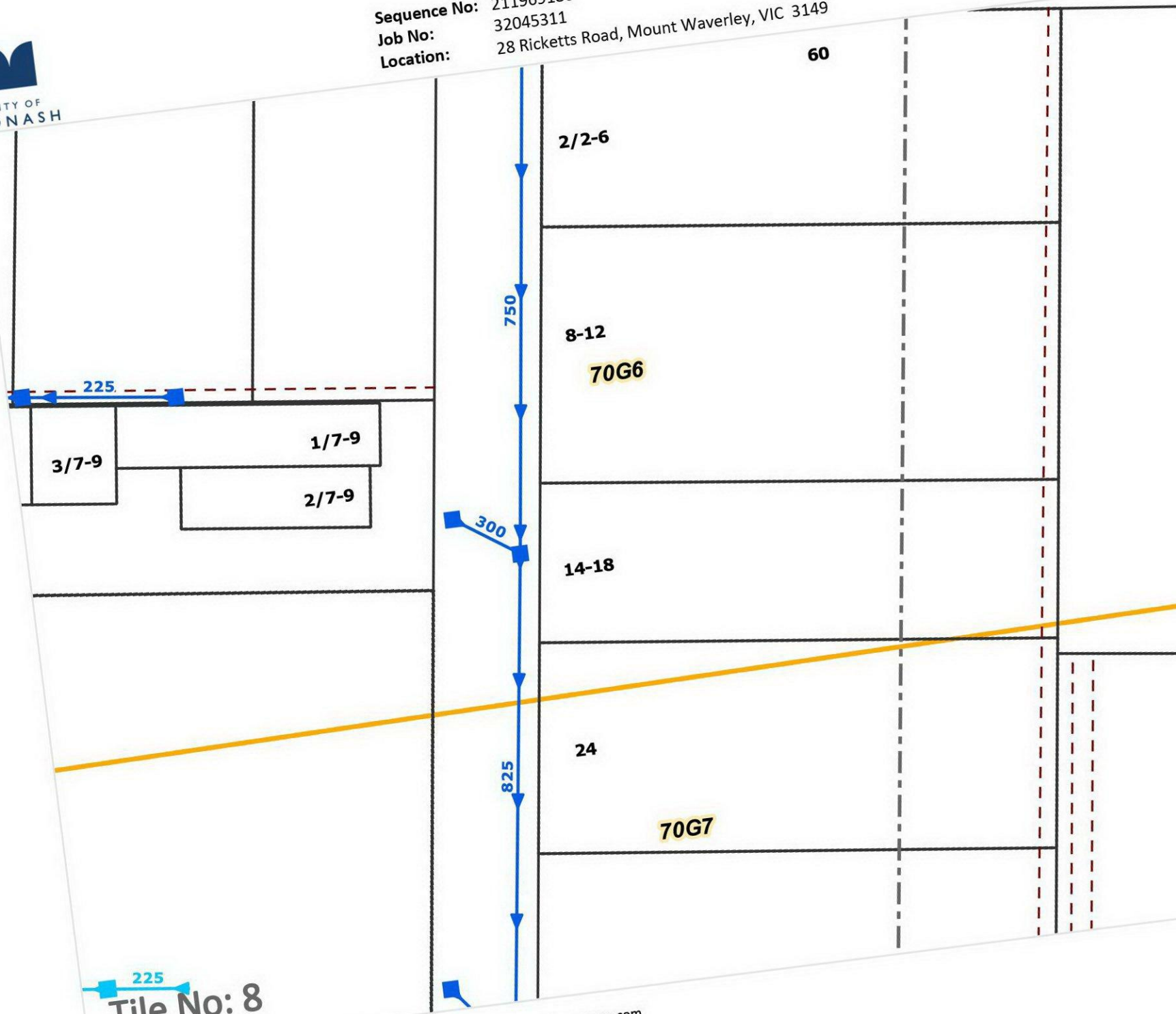
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Tile No: 8



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

Legend

Drain Pits

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

Drains

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

Drain - Diameters

eg 223

Melway Grid

eg 70 E1

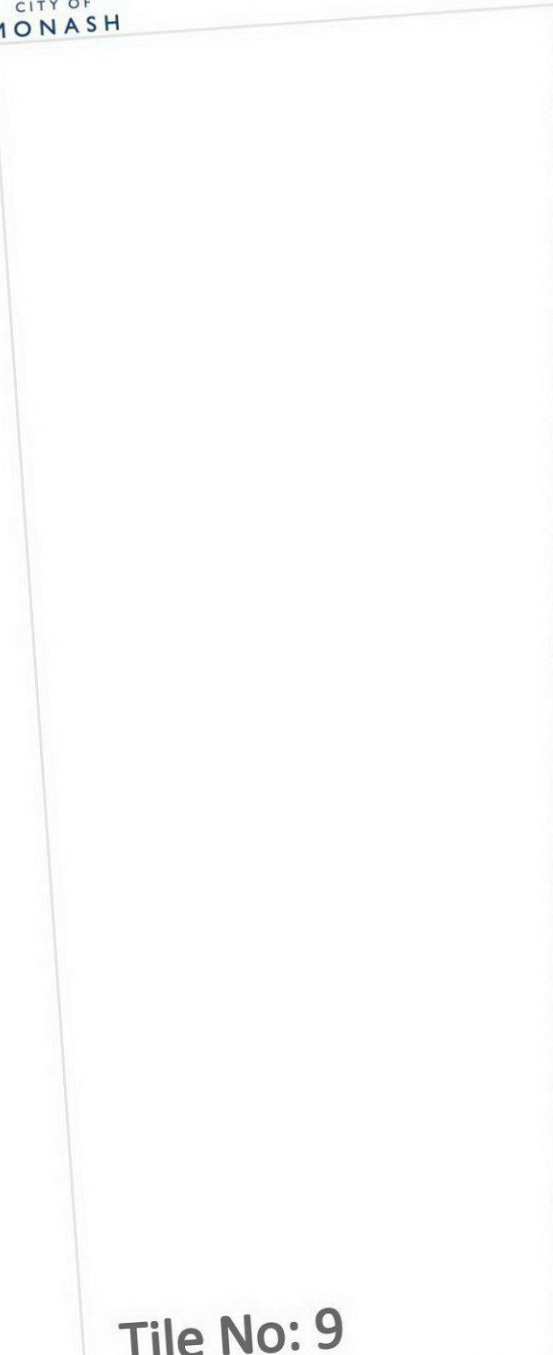
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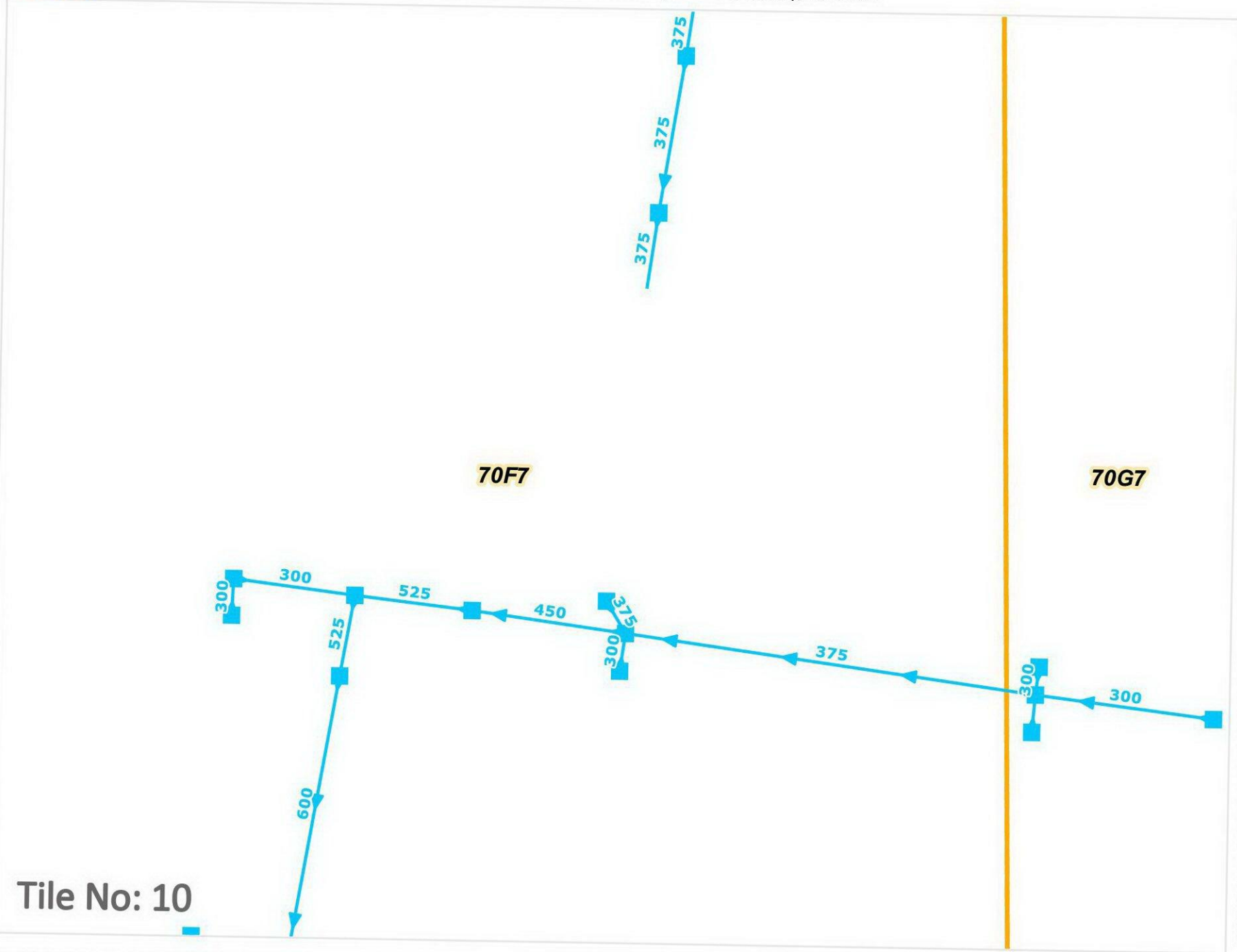


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Tile No: 9



Legend

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- Council
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  - DOT (Vic Roads)
  - Unknown

- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

**Drain - Diameters**  
eg 223

**Melway Grid**  
eg 70 E1

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Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

**Drain - Diameters**  
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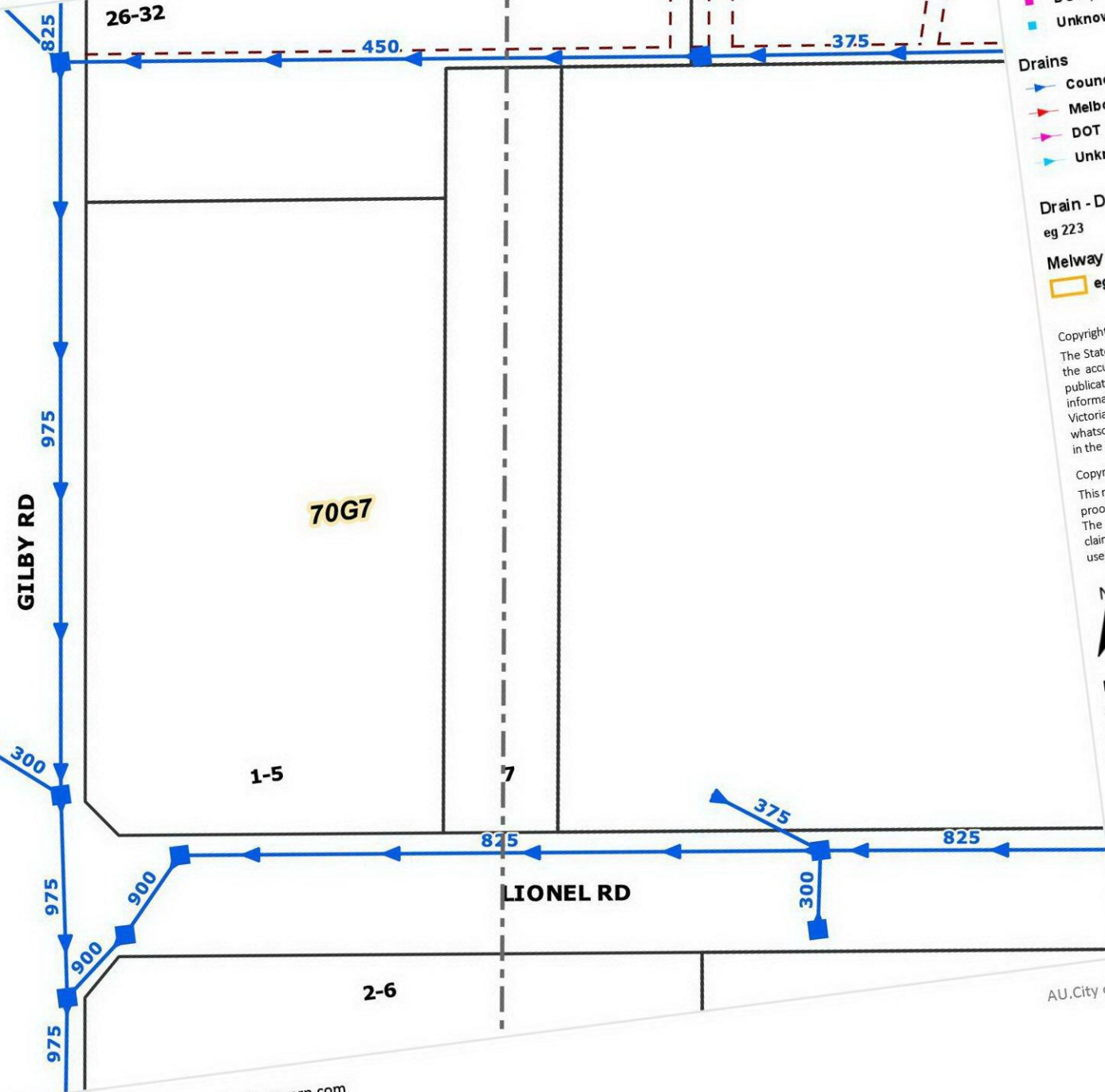
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Scale: 1:1000  
Expires: 27 Jun 2022

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CITY OF MONASH



Tile No: 11

138/45



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

**Drain - Diameters**  
eg 223

**Melway Grid**  
eg 70 E1

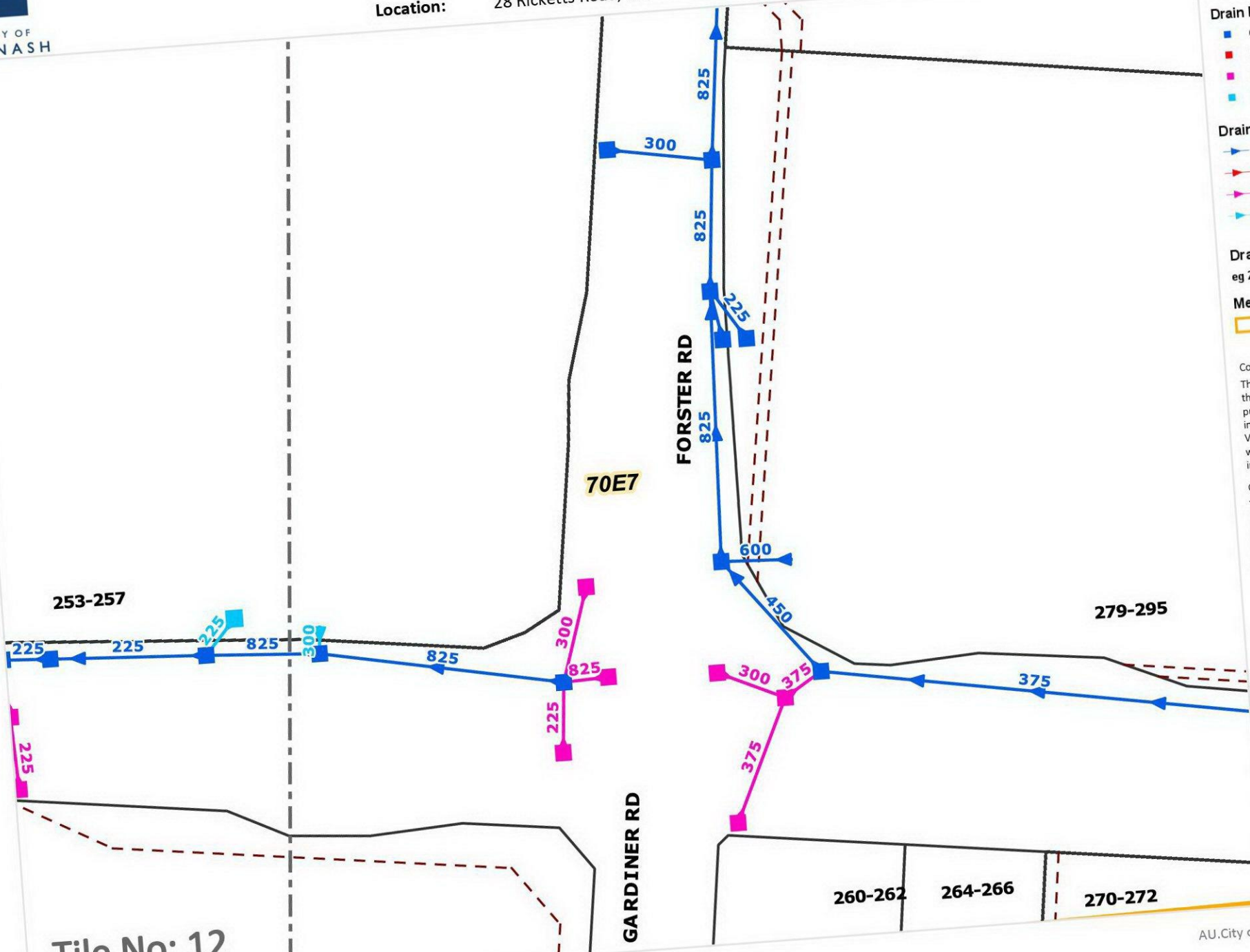
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Scale: 1:1000  
Expires: 27 Jun 2022

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Tile No: 12



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown
- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown
- Drain - Diameters**  
eg 223
- Melway Grid**  
eg 70 E1

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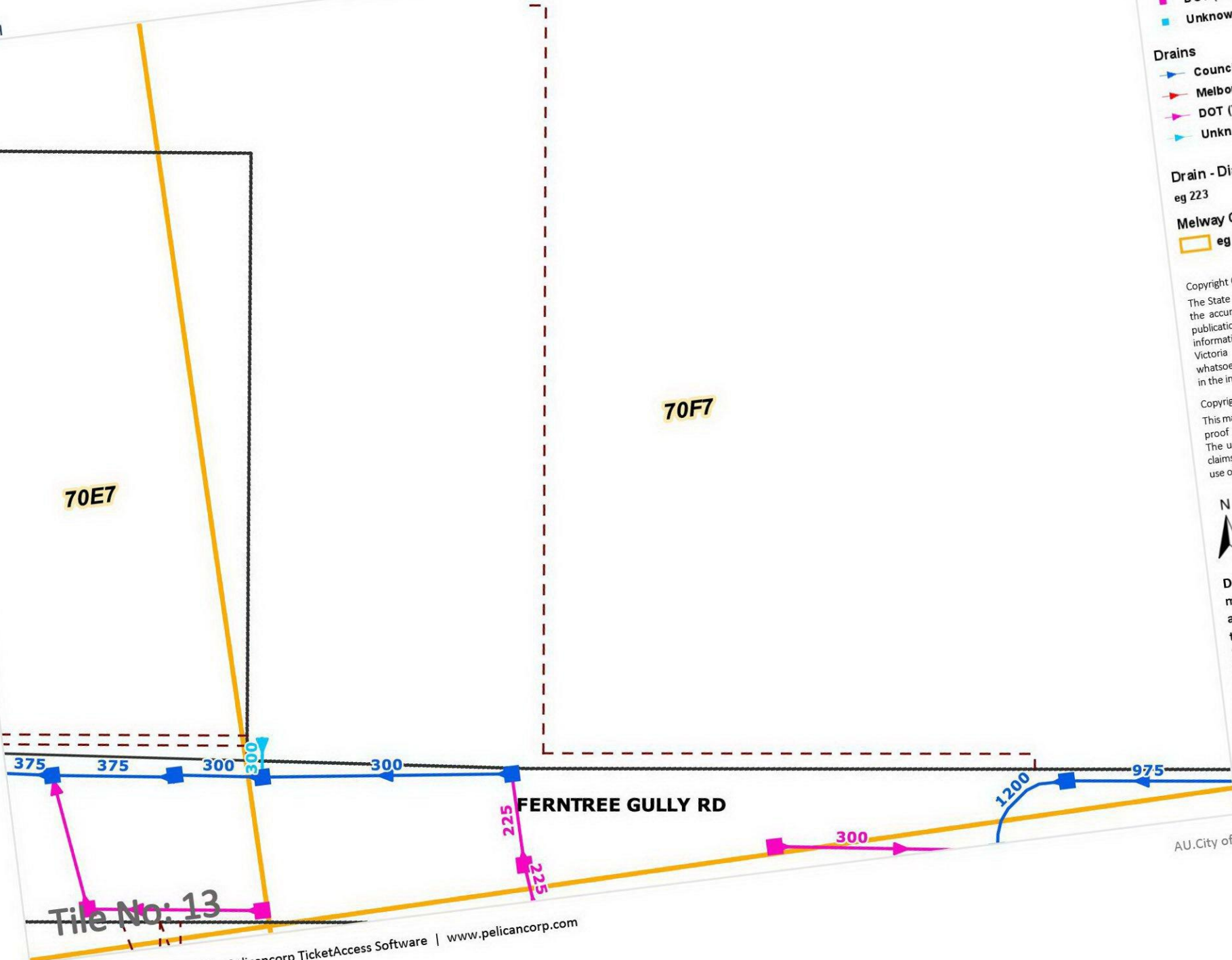
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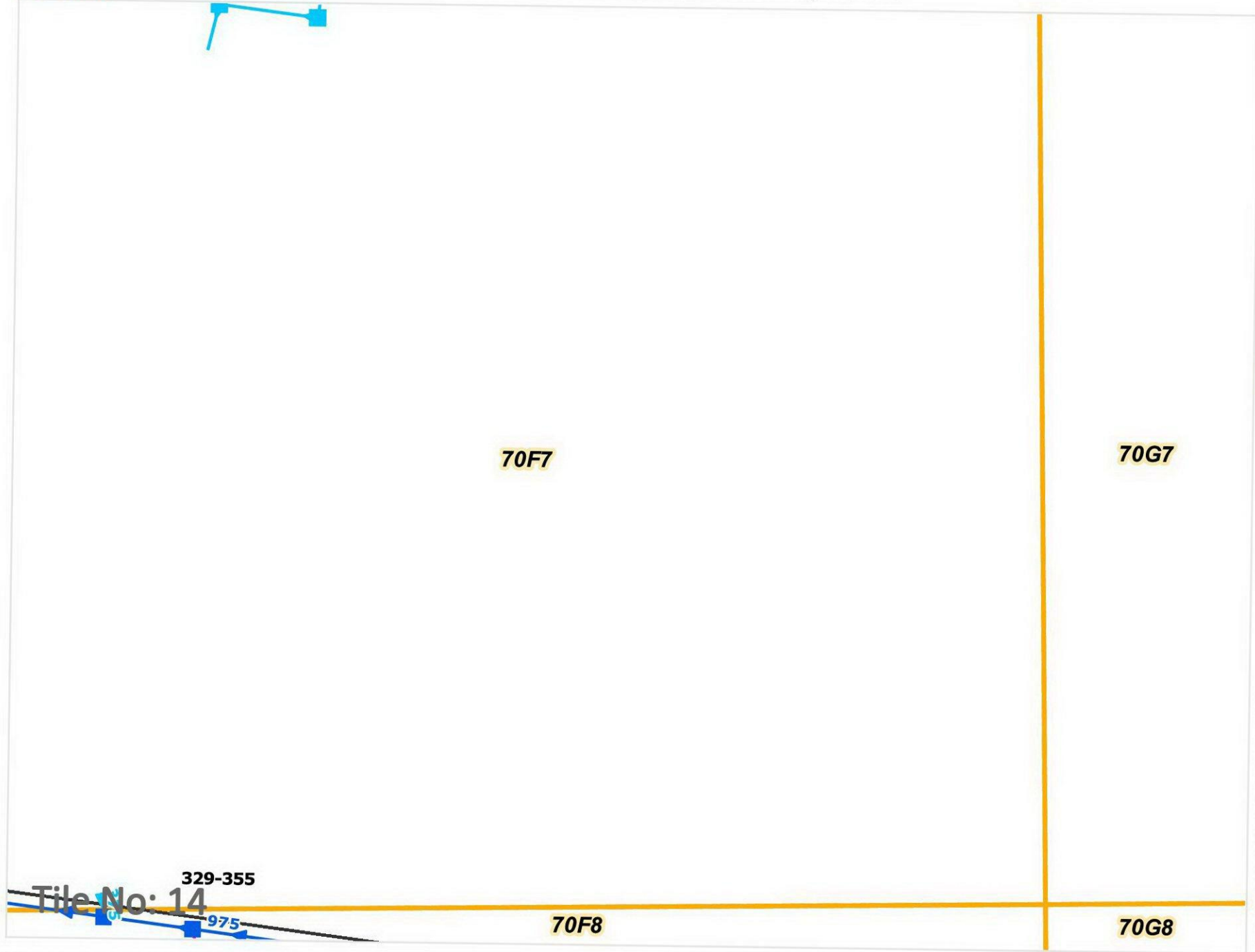


Scale: 1:1000  
Expires: 27 Jun 2022

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AU.City of Monash - Response Plan.docx (09 Apr 2020)





Legend

Drain Pits

- Council
- Melbourne Water
- DOT (Vic Roads)
- Unknown

Drains

- ▶ Council
- ▶ Melbourne Water
- ▶ DOT (Vic Roads)
- ▶ Unknown

Drain - Diameters

eg 223

Melway Grid

eg 70 E1

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329-355

File No: 14

975

70F8

70G8





Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

8-12

Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown
- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown
- Drain - Diameters**  
eg 223
- Melway Grid**  
eg 70 E1

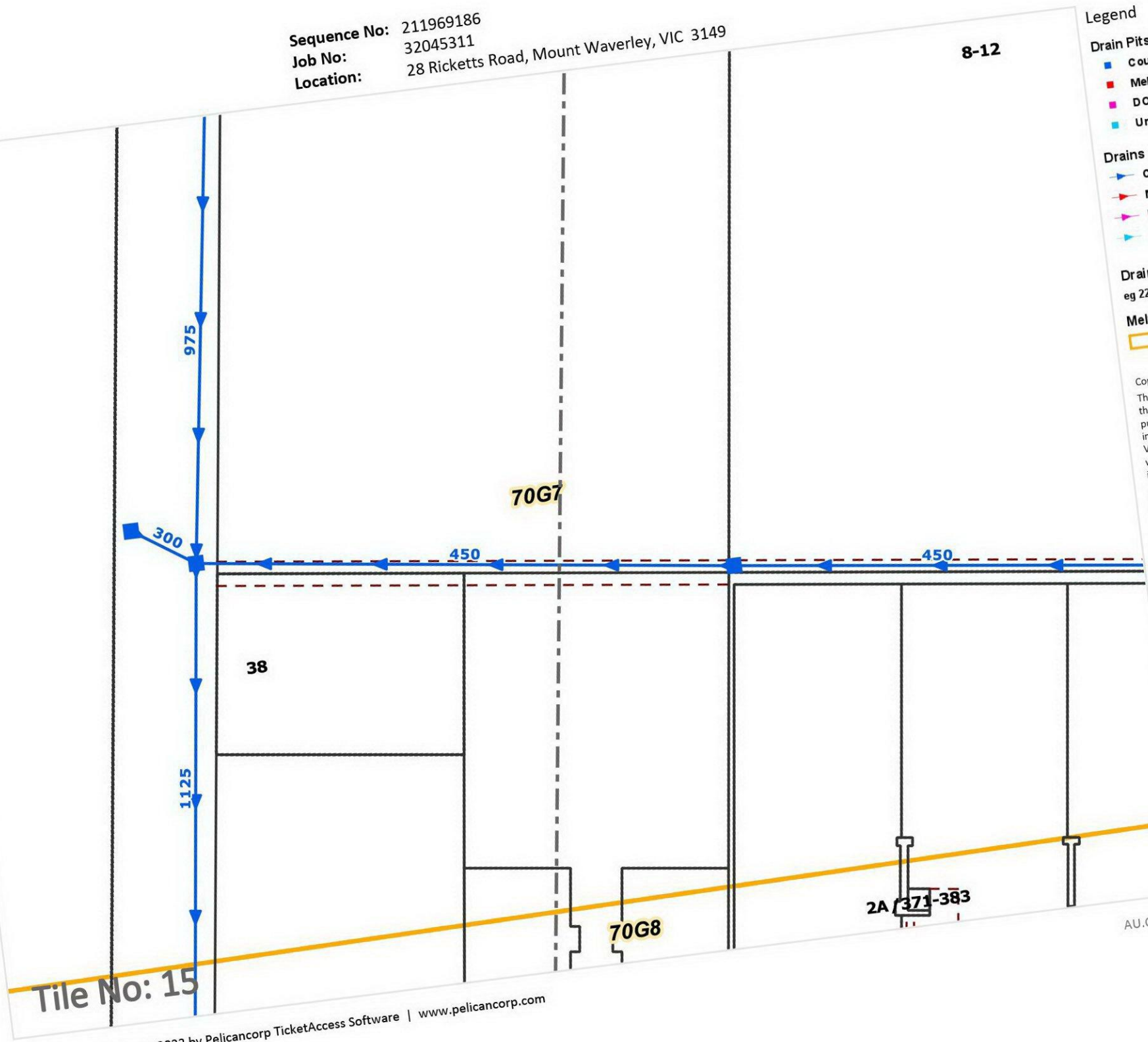
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Tile No: 15



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

**Drain - Diameters**  
eg 223

**Melway Grid**  
eg 70 E1

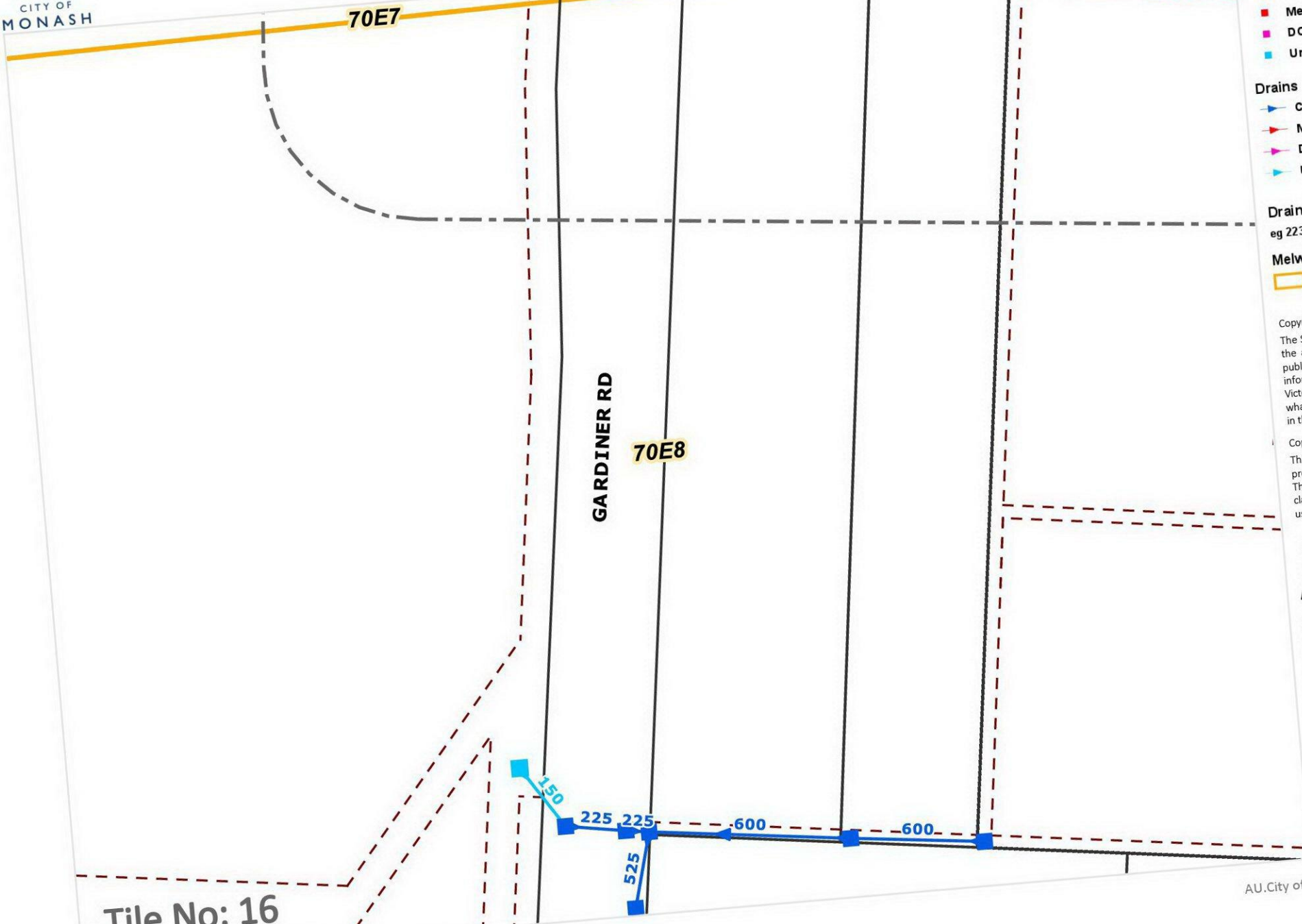
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Tile No: 16



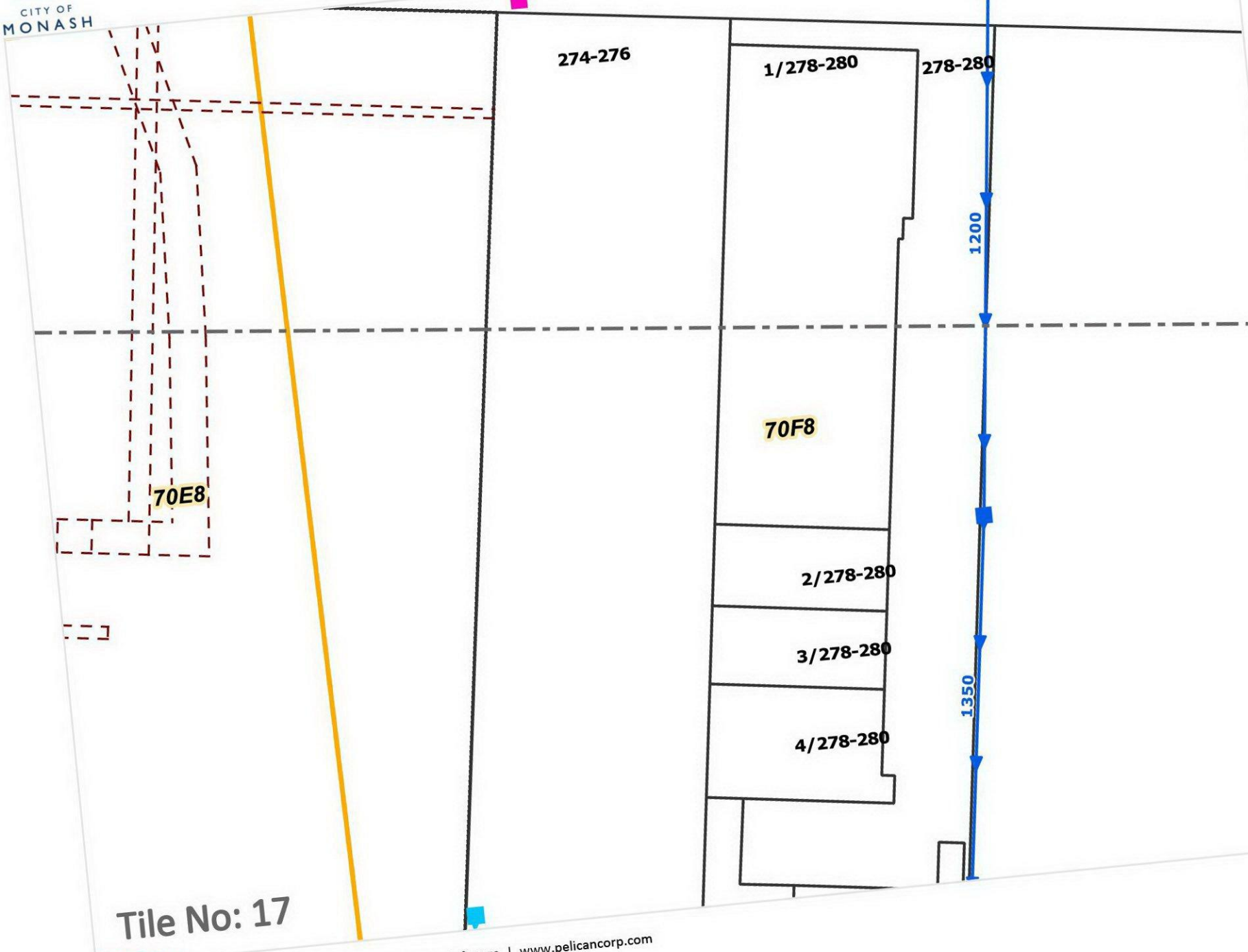
Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149



FERNTREE GULLY RD

Legend

- Drain Pits
  - Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown
- Drains
  - Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown
- Drain - Diameters  
eg 223
- Melway Grid  
eg 70 E1



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Tile No: 17



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149

Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

**Drain - Diameters**  
eg 223

**Melway Grid**  
eg 70 E1

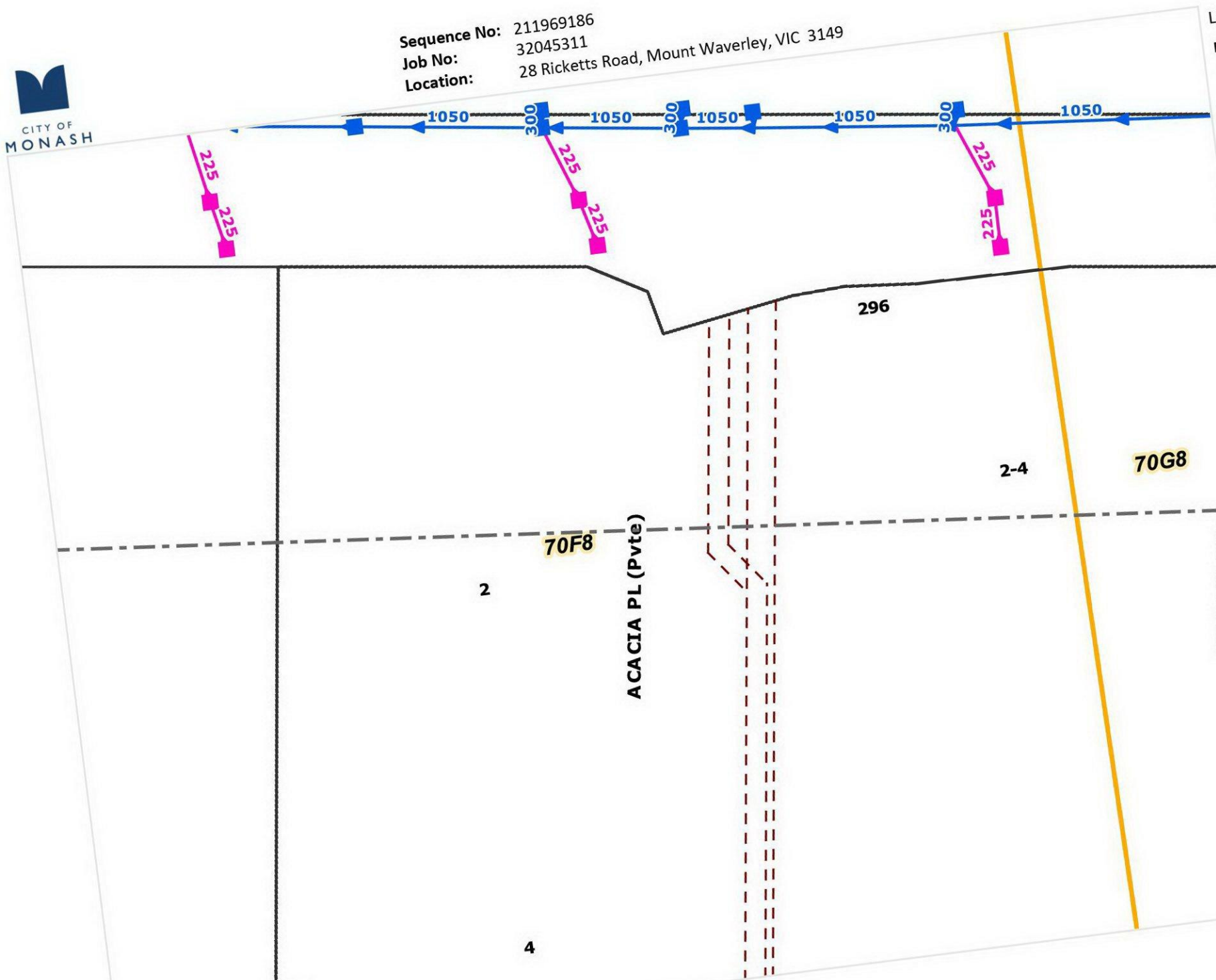
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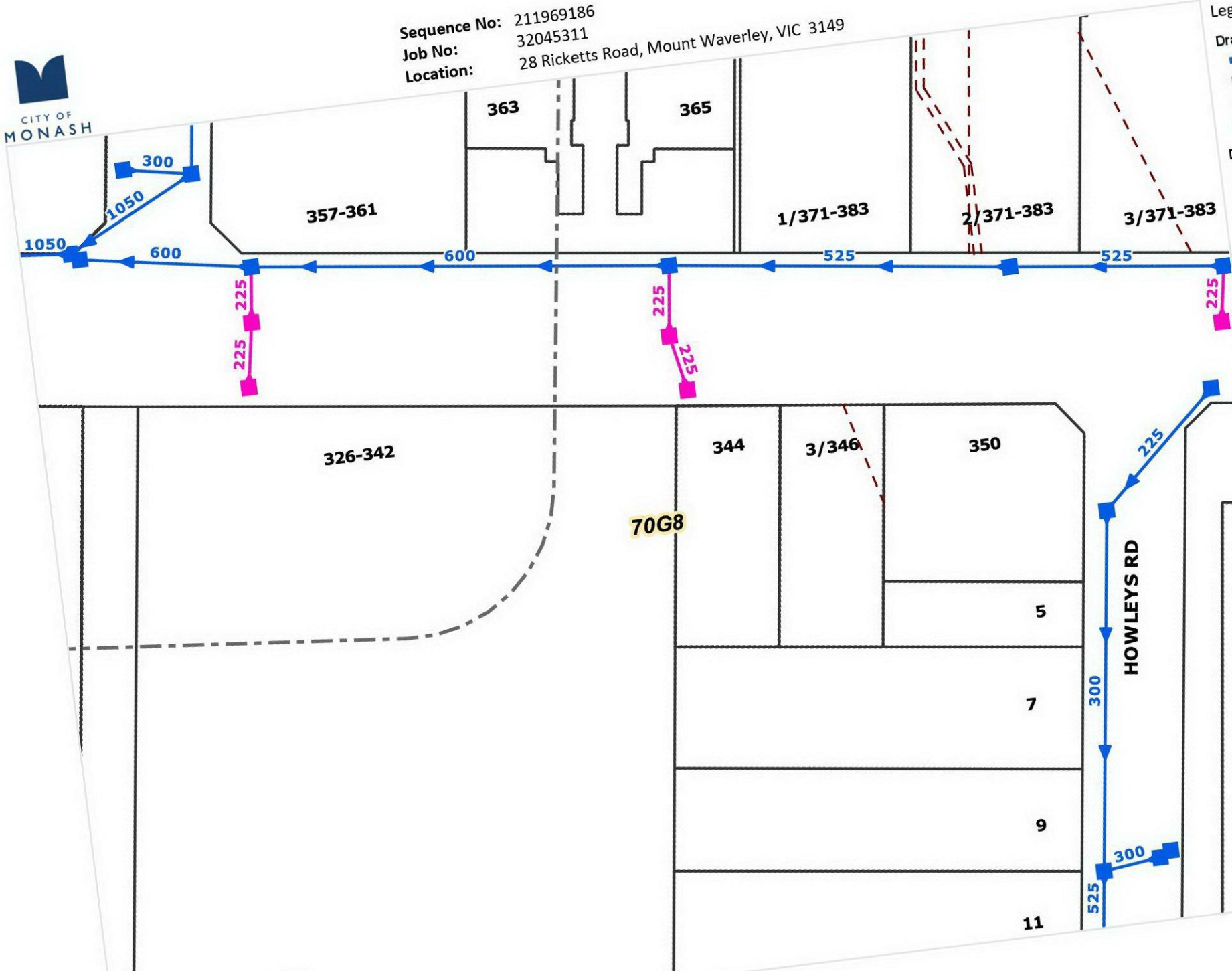
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Tile No: 18



Sequence No: 211969186  
Job No: 32045311  
Location: 28 Ricketts Road, Mount Waverley, VIC 3149



Legend

- Drain Pits**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown
- Drains**
- Council
  - Melbourne Water
  - DOT (Vic Roads)
  - Unknown

Drain - Diameters  
eg 223

Melway Grid  
eg 70 E1

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Tile No: 19

**From:** [Anuja Adhikari](#)  
**To:** [Sana Khaji](#)  
**Subject:** Drainage Advice - On-site Detention Design Flow  
**Date:** Wednesday, 24 August 2022 10:02:16 AM  
**Attachments:** [image003.png](#)  
[image004.png](#)  
[image005.png](#)  
[image006.png](#)  
[image008.png](#)  
[ATT00001.png](#)

---

Hi Sana

Please be advised that there will be no detention or contribution required for the development at this site as this is an industrial area.

So you can proceed with the design as per the building regulation and As3500.

Please follow below link if you wish to refer to Council's guide lines.

If the proposed development requires a planning permit to be obtained, drainage plans will need to be submitted for Council's approval as per the drainage permit condition. Refer below link for all the details.

<https://www.monash.vic.gov.au/files/assets/public/edms/planning-development/asset-protection/city-of-monash-engineering-plan-checklist.pdf>

[Engineering Plan Checking Application | City of Monash](#)

Thank you

Anuja



**Anuja Adhikari**  
**Development & Transport Engineer**  
**Email:** [Anuja.Adhikari@monash.vic.gov.au](mailto:Anuja.Adhikari@monash.vic.gov.au)  
**Phone:** 03 9518 3440  
**Mobile:** 0400 149 174

**National Relay Service:** 1800 555 660  
293 Springvale Road, Glen Waverley, VIC 3150  
[www.monash.vic.gov.au](http://www.monash.vic.gov.au)

---

**From:** Sana Khaji <[sanak@dceng.com.au](mailto:sanak@dceng.com.au)>  
**Sent:** Thursday, 18 August 2022 3:06 PM  
**To:** Anuja Adhikari <[Anuja.Adhikari@monash.vic.gov.au](mailto:Anuja.Adhikari@monash.vic.gov.au)>  
**Subject:** RE: Drainage Advice - On-site Detention Design Flow

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Hi Anuja,

Just wanted to follow up and see if you have any advice regarding to the following address industrial development: 170 Forster Road, Mount Waverly.

Kind regards,

**Sana Khaji**  
Junior Engineer



**DALTON CONSULTING ENGINEERS PTY LTD**

[melbourne . geelong . brisbane](#)  
[wurundjeri . wadawurrung . turrbal](#)

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T +61 3 9813 7400  
E [sanak@dceng.com.au](mailto:sanak@dceng.com.au)



[Email disclaimer](#) | [dceng.com.au](http://dceng.com.au)

---

**From:** Sana Khaji <[sanak@dceng.com.au](mailto:sanak@dceng.com.au)>  
**Sent:** Wednesday, 20 July 2022 12:34 PM  
**To:** Anuja Adhikari <[Anuja.Adhikari@monash.vic.gov.au](mailto:Anuja.Adhikari@monash.vic.gov.au)>  
**Subject:** RE: Drainage Advice - On-site Detention Design Flow

Hi Anuja,

Thanks for your response. The Address of the proposed development is :170 Forster Road, Mount Waverly. Can you also let me know if there is a specific guideline for the stormwater or drainage design for Monash City Council ?

Kind regards,

**Sana Khaji**  
Junior Engineer



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[wurundjeri . wadawurrung . turrbal](#)

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T +61 3 9813 7400  
E [sanak@dceng.com.au](mailto:sanak@dceng.com.au)



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---

**From:** Anuja Adhikari <[Anuja.Adhikari@monash.vic.gov.au](mailto:Anuja.Adhikari@monash.vic.gov.au)>  
**Sent:** Wednesday, 20 July 2022 11:57 AM  
**To:** Sana Khaji <[sanak@dceng.com.au](mailto:sanak@dceng.com.au)>  
**Subject:** Drainage Advice - On-site Detention Design Flow

Hi Sana

If the development is within the industrial area and is fully impervious, Council does not require any detention system to be installed.

Can you provide me with the address of the proposed development. I will provide detailed response specific for your development site.

Thank you

Anuja



**Anuja Adhikari**  
**Development & Transport Engineer**

**Email:** [Anuja.Adhikari@monash.vic.gov.au](mailto:Anuja.Adhikari@monash.vic.gov.au)  
**Phone:** 03 9518 3440  
**Mobile:** 0400 149 174

**National Relay Service:** 1800 555 660  
293 Springvale Road, Glen Waverley, VIC 3150  
[www.monash.vic.gov.au](http://www.monash.vic.gov.au)

---

**From:** Sana Khaji <[sanak@dceng.com.au](mailto:sanak@dceng.com.au)>  
**Sent:** Thursday, 7 July 2022 12:02 PM  
**To:** [mail@monash.vic.gov.au](mailto:mail@monash.vic.gov.au)  
**Subject:** On-site Detention Design Flow

**CAUTION:** This email originated from outside the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi,

My name is Sana, and I am working as a civil engineer at Dalton Consulting Engineers (DCE). I am preparing a stormwater management strategy report and I need to calculate the on-site detention storage based on the City of Monash requirements. The subject site that I am working on its report is in industrial use and will be re-developed for industrial use. Can you please let me know what is the required design flow for on-site detention storage sizing? Is that 1.5 ARI?

Kind regards,

**Sana Khaji**  
Junior Engineer





**DALTON CONSULTING ENGINEERS PTY LTD**

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[wurundjeri . wadawurrung . turrbal](#)

**D** +61 3 9813 7453

**T** +61 3 9813 7400

**E** [sanak@dceng.com.au](mailto:sanak@dceng.com.au)



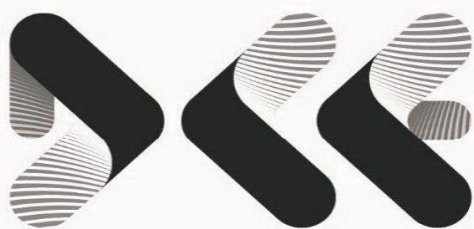
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## **Appendix B: Drainage Calculations**



**DALTON  
CONSULTING  
ENGINEERS**

# Stormwater Calculations

---

## Axxess Corporate Park- Mt. Waverly

Revision B- September 2022

---

dexus

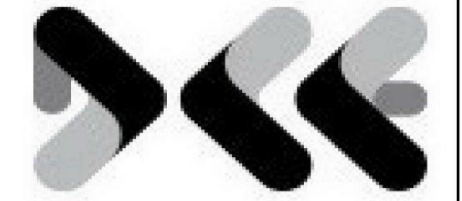
**DALTON  
CONSULTING  
ENGINEERS**

Level 3, 678 Victoria Street  
Richmond VIC 3121

**T** +61 3 9813 7400  
**E** info@dceng.com.au  
**W** dceng.com.au

**ABN 78 429 221 049**

# MAJOR STORM EVENT CATCHMENT PLAN

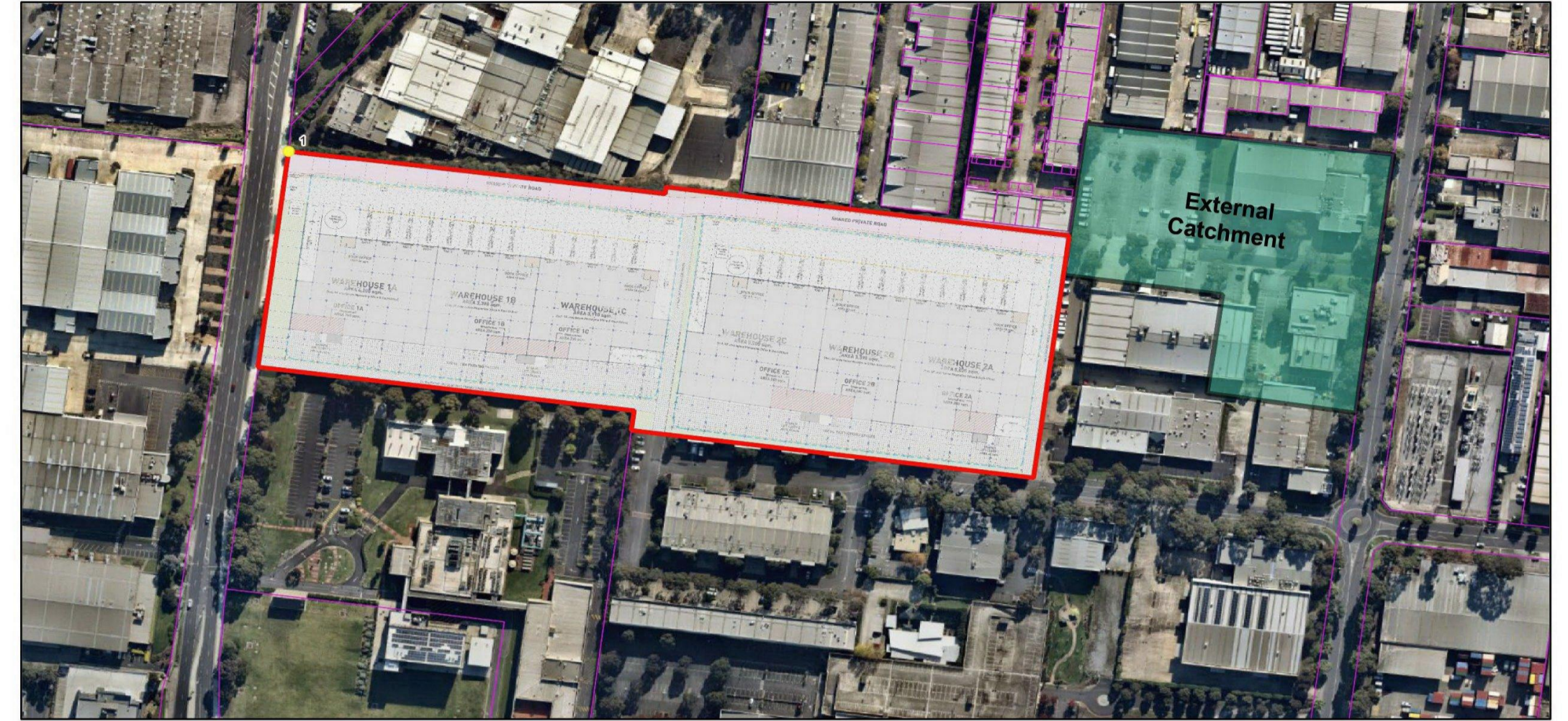


PROJECT DETAILS	
Job Description:	Axxess Corporate Park- Mount Waverly
Job Number:	22058
Compiled by:	S Khaji
Date:	12/09/2022

Existing Catchment Plan



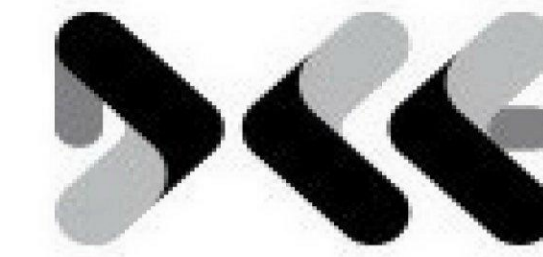
Developed Catchment Plan



## MAJOR STORM EVENT HYDROLOGY COMPUTATIONS

PROJECT DETAILS	
Job Description:	Access Corporate Park- Mount Waverly
Job Number:	22058
Compiled by:	S Khaji
Date:	12/09/2022
Council:	OTHER
Minor Storm Frequency 1:	10% AEP
Minor Storm Frequency 2:	20% AEP
Major Storm Frequency:	1% AEP
Blockage Factor (%):	

RAINFALL DATA					
Source	Australian Bureau of Meteorology Website-IFD Data				
Latitude	-37.897902	Longitude	145.133525	Zone	0
Date	29/06/2022				



C10	0.151008839
-----	-------------

CATCHMENT DETAILS (ALL AREAS IN HECTARES)					
Name	Sub-Catch 1	Sub-Catch 2	Sub-Catch 3	Sub-Catch 4	Sub-Catch 5
Fraction Imp. (f)	0.9	0.1	0.7	0.8	1
C10	0.825	0.226	0.675	0.750	0.900
C Minor 1	0.825	0.226	0.675	0.750	0.900
C Minor 2	0.784	0.215	0.642	0.713	0.855
C Major	0.990	0.271	0.810	0.900	1.080
Existing Catchment	6.0				
Developed Catchment	6.0				
Developed Catchment+ External	8.2				
D					
E					
F					
G					
H					
I					
J					
K					
L					
M					
N					
O					
P					
Q					
R					
S					
T					

Minor 1/2?	Minor 1 Ae	Minor 2 Ae	Major Ae
1	4.951	0.000	5.941
1	4.951	0.000	5.941
1	6.766	0.000	8.119
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000
1	0.000	0.000	0.000

**TIME OF CONCENTRATION**  
Based on the Kinematic Wave Equation:

$$T_o I^{0.4} = 6.94 \frac{(L x n)^{0.6}}{S^{0.3}}$$

Where...

- T = Overland Flow Time (min)
- I = Rainfall Intensity, (mm/hr)
- L = Length of flow path, (m)
- n = Manning
- S = Slope, (m/m)

**PEAK FLOW**  
Based on the Rational Method:

$$Q = CIA$$

Where...

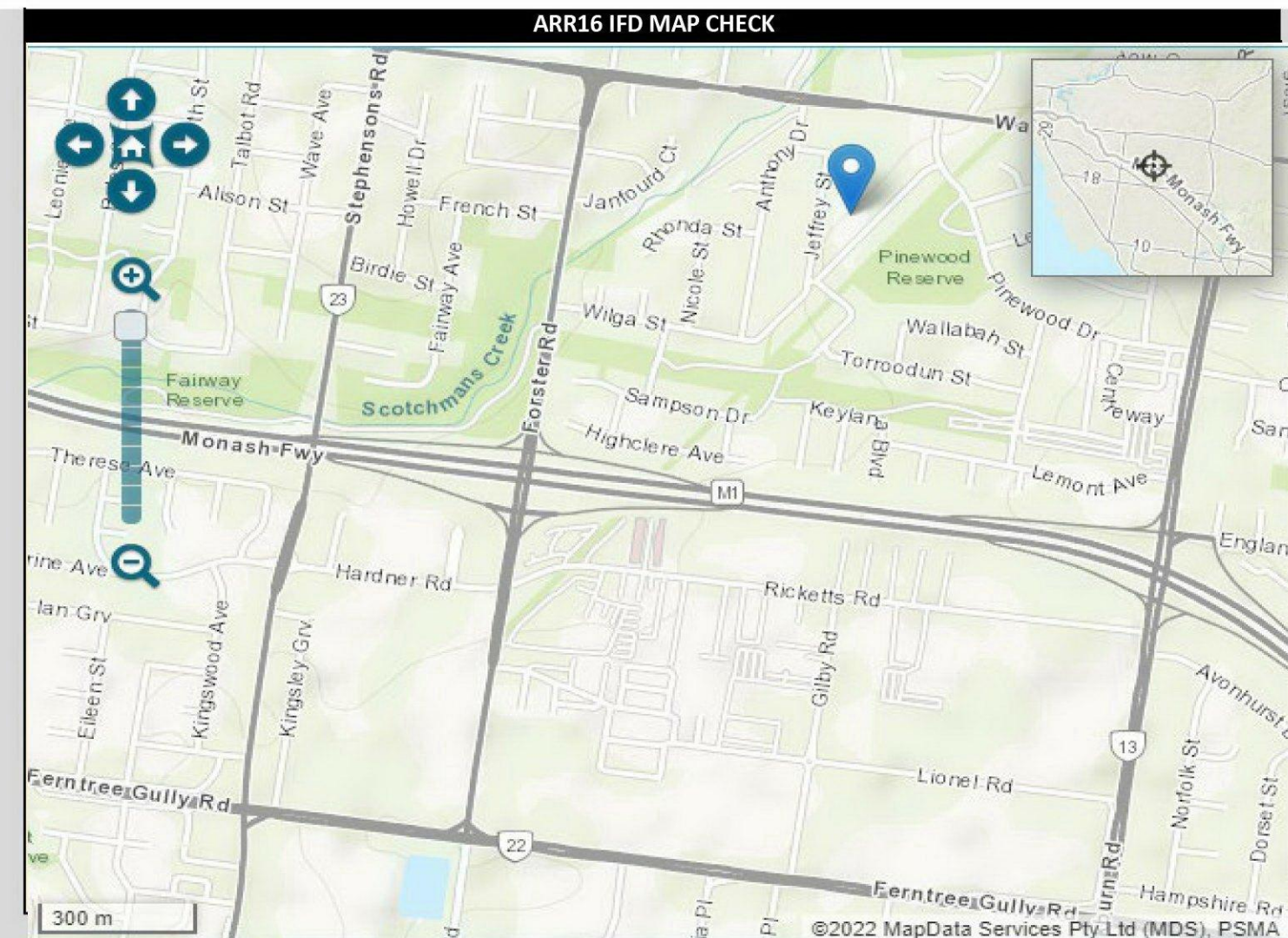
- Q = Peak Flow (cu m/s)
- C = Co-Efficient of Runoff
- I = Rainfall Intensity, (mm/hr)
- A = Area (hectares)

Section	Contributing Catchments		FLOW CALCULATIONS																																				
	Existing Catchment	Developed Catchment	Developed Catchment+ External	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	Length (m)	Initial T (min)	Surface	n	S = Slope (m/m)	Minor 1 ToC (min)	Minor 1 I (mm/hr)	Minor 1 Ae (ha)	Minor 1 Q (m3/s)	Minor 2 ToC (min)	Minor 2 I (mm/hr)	Minor 2 Ae (ha)	Minor 2 Q (m3/s)	Major ToC (min)	Major I (mm/hr)	Major Ae (ha)	Major Q (m3/s)	Q Overland (m3/s)	
1 (Existing)	Y																					523	5.0	Asphalt	0.015	0.013	21.369	56.719	4.951	0.78	22.977	46.019	0.000	0.000	17.702	105.555	5.941	1.74	1.0
1 (Developed)		Y																				550	5.0	Asphalt	0.015	0.013	22.351	55.180	4.951	0.76	24.063	43.698	0.000	0.000	18.444	102.163	5.941	1.69	0.9
1			Y																			581	5.0	Asphalt	0.015	0.017	21.188	56.719	6.766	1.07	22.779	46.019	0.000	0.000	17.567	105.555	8.119	2.38	1.315

RAINFALL DATA										
Source	Australian Bureau of Meteorology Website-IFD Data									
Latitude	-37.897902	Longitude	145.133525	Zone		Date	29/06/2022			
Annual Exceedance Probability (AEP) Coefficients										
	4EY	2EY	1EY	0.2EY	50% AEP <sup>a</sup>	20% AEP <sup>a</sup>	10% AEP	5% AEP	2% AEP	1% AEP
C0	-1.33E-01	1.87E-01	4.72E-01	9.09E-01	5.84E-01	8.89E-01	1.07E+00	1.22E+00	1.41E+00	1.55E+00
C1	8.62E-01	8.16E-01	7.71E-01	7.20E-01	7.55E-01	7.20E-01	6.77E-01	6.36E-01	5.13E-01	4.20E-01
C2	-5.00E-02	-2.48E-03	3.55E-02	8.10E-02	5.14E-02	8.10E-02	1.25E-01	1.69E-01	3.12E-01	4.19E-01
C3	-2.01E-02	-4.19E-02	-5.64E-02	-6.70E-02	-6.10E-02	-6.70E-02	-8.26E-02	-9.81E-02	-1.57E-01	-2.01E-01
C4	6.26E-03	1.06E-02	1.29E-02	1.29E-02	1.33E-02	1.29E-02	1.51E-02	1.75E-02	2.85E-02	3.67E-02
C5	-6.67E-04	-1.05E-03	-1.20E-03	-9.91E-04	-1.18E-03	-9.91E-04	-1.13E-03	-1.28E-03	-2.23E-03	-2.95E-03
C6	2.48E-05	3.72E-05	4.05E-05	2.60E-05	3.79E-05	2.60E-05	2.83E-05	3.18E-05	6.31E-05	8.69E-05

**NOTE:**  
 The coefficients can be applied to estimate the design rainfall depth for a full range of durations from 1 minute to 7 days.  
 It is recommended that only three significant figures are used when undertaking calculations using design rainfalls generated in this way.  
<sup>a</sup> The 50% AEP IFD does not correspond to the 2 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 1.44 ARI.  
<sup>\*</sup> The 20% AEP IFD does not correspond to the 5 year Average Recurrence Interval (ARI) IFD. Rather it corresponds to the 4.48 ARI.

Duration (mins)	4EY	2EY	1EY	0.2EY	50% AEP	20% AEP	10% AEP	5% AEP	2% AEP	1% AEP
1	52.532	72.319	96.166	148.874	107.569	145.955	174.418	204.242	246.976	282.303
2	46.346	62.852	82.145	125.015	91.409	122.563	144.594	167.246	195.399	217.657
3	41.700	56.505	73.673	112.345	82.044	110.142	130.216	150.924	177.629	198.954
4	38.086	51.611	67.258	102.991	75.000	100.972	119.763	139.241	165.393	186.530
5	35.187	47.670	62.106	95.476	69.338	93.604	111.339	129.796	155.325	176.153
6	32.800	44.409	57.840	89.210	64.637	87.461	104.266	121.812	146.589	166.944
7	30.793	41.657	54.231	83.866	60.650	82.221	98.192	114.908	138.854	158.628
8	29.077	39.296	51.129	79.236	57.215	77.682	92.897	108.850	131.934	151.066
9	27.589	37.244	48.428	75.174	54.217	73.700	88.226	103.478	125.701	144.168
10	26.284	35.440	46.051	71.575	51.574	70.172	84.067	98.674	120.055	137.856
11	25.127	33.840	43.940	68.360	49.222	67.020	80.337	94.348	114.918	132.067
12	24.093	32.409	42.050	65.467	47.113	64.183	76.969	90.429	110.224	126.743
13	23.162	31.119	40.346	62.846	45.209	61.614	73.910	86.858	105.920	121.835
14	22.319	29.951	38.801	60.460	43.481	59.275	71.117	83.591	101.958	117.298
15	21.550	28.886	37.393	58.277	41.904	57.134	68.555	80.589	98.300	113.094
16	20.846	27.911	36.102	56.270	40.458	55.167	66.197	77.819	94.913	109.190
17	20.199	27.014	34.915	54.418	39.127	53.351	64.017	75.255	91.767	105.555
18	19.600	26.185	33.819	52.704	37.896	51.670	61.995	72.874	88.837	102.163
19	19.045	25.418	32.803	51.111	36.755	50.108	60.114	70.656	86.102	98.992
20	18.529	24.704	31.858	49.626	35.693	48.653	58.360	68.585	83.544	96.022
21	18.047	24.037	30.977	48.239	34.702	47.293	56.719	66.647	81.145	93.233
22	17.596	23.415	30.153	46.940	33.775	46.019	55.180	64.827	78.891	90.611
23	17.172	22.830	29.380	45.720	32.906	44.823	53.735	63.117	76.770	88.140
24	16.774	22.281	28.654	44.572	32.089	43.698	52.373	61.505	74.769	85.809
25	16.399	21.764	27.970	43.489	31.319	42.636	51.089	59.983	72.879	83.606
26	16.044	21.276	27.325	42.466	30.592	41.634	49.875	58.545	71.091	81.522
27	15.708	20.814	26.715	41.498	29.905	40.685	48.725	57.182	69.397	79.545
28	15.390	20.376	26.137	40.581	29.254	39.785	47.635	55.889	67.789	77.670
29	15.088	19.961	25.589	39.710	28.636	38.931	46.600	54.660	66.261	75.887
30	14.800	19.566	25.068	38.881	28.049	38.119	45.615	53.492	64.807	74.191
31	14.526	19.190	24.573	38.092	27.490	37.345	44.677	52.378	63.423	72.575
32	14.265	18.832	24.101	37.340	26.957	36.608	43.782	51.316	62.102	71.034
33	14.015	18.490	23.650	36.622	26.449	35.904	42.928	50.302	60.841	69.563
34	13.776	18.164	23.219	35.936	25.964	35.231	42.112	49.333	59.635	68.157
35	13.547	17.851	22.808	35.279	25.499	34.588	41.331	48.405	58.481	66.812
36	13.328	17.551	22.413	34.651	25.055	33.971	40.582	47.516	57.377	65.523
37	13.118	17.264	22.035	34.047	24.628	33.380	39.865	46.663	56.317	64.289
38	12.915	16.988	21.673	33.469	24.219	32.812	39.176	45.845	55.301	63.104
39	12.721	16.723	21.324	32.913	23.826	32.267	38.514	45.059	54.325	61.967
40	12.534	16.468	20.990	32.378	23.448	31.743	37.878	44.303	53.387	60.874
41	12.354	16.223	20.667	31.863	23.085	31.239	37.266	43.576	52.484	59.823
42	12.180	15.987	20.357	31.368	22.735	30.753	36.676	42.876	51.616	58.812
43	12.012	15.759	20.058	30.890	22.397	30.285	36.108	42.201	50.779	57.837
44	11.850	15.539	19.770	30.430	22.072	29.833	35.559	41.550	49.972	56.899
45	11.694	15.327	19.491	29.985	21.758	29.397	35.030	40.921	49.194	55.993
46	11.542	15.121	19.222	29.556	21.455	28.976	34.519	40.315	48.442	55.120
47	11.396	14.923	18.962	29.140	21.161	28.569	34.026	39.728	47.716	54.276
48	11.254	14.731	18.711	28.739	20.878	28.175	33.548	39.161	47.015	53.461
49	11.117	14.545	18.468	28.350	20.603	27.795	33.086	38.612	46.336	52.673
50	10.983	14.365	18.232	27.974	20.338	27.426	32.638	38.081	45.680	51.911
55	10.373	13.542	17.157	26.258	19.125	25.743	30.598	35.660	42.692	48.444
60	9.843	12.828	16.226	24.774	18.076	24.288	28.835	33.570	40.118	45.464
65	9.376	12.202	15.412	23.477	17.158	23.017	27.296	31.745	37.877	42.874
70	8.962	11.648	14.692	22.333	16.348	21.895	25.938	30.138	35.908	40.602
75	8.591	11.153	14.051	21.315	15.626	20.897	24.732	28.711	34.164	38.593
80	8.257	10.709	13.475	20.402	14.978	20.002	23.652	27.434	32.607	36.802
85	7.954	10.306	12.956	19.580	14.394	19.196	22.679	26.285	31.208	35.196
90	7.678	9.940	12.483	18.834	13.863	18.464	21.798	25.245	29.944	33.747



Council		C'10	Frequency Factor		Y or N?
CARDINIA	0.11508008	4EY	0.80	Y	
CASEY	0.11508008	2EY	0.80	N	
HUME	0.16031382	1EY	0.80		
MELTON	0.15445632	0.2EY	0.95		
WHITTLESEA	0.16031382	50% AEP	0.85		
WYNDHAM	0.15445632	20% AEP	0.95		
OTHER	0.15100884	10% AEP	1.00		
		5% AEP	1.05		
		2% AEP	1.15		
		1% AEP	1.20		

Zone	Frac. Impervious	Surface	FR	Pipe Type	Mannings
Lot <450sq.m	0.8	Smooth Concrete	0.013	PE	0.01
Lot 450-600sq.m	0.7	Asphalt	0.015	PP	0.01
Lot 600-1000sq.m	0.6	Road Reserve	0.02	PVC	0.01
Lot 1000-4000sq.m	0.3	Earth Channel	0.025	RC	0.013
Major Roads	0.8	Grass Channel	0.035	VC	0.015
Local Roads	0.7	OTHER			
Drainage Reserve	0.25				
Open Space	0.1				
Schools	0.7				
Mixed Use Zone	0.7				
Industrial	0.9				
Medium Density	0.9				
Health/Community	0.7				
Impervious	1				

Pit Type	Co-Ordinate Type
SEP	Easting
GEP	Latitude
	Northing
	Longitude

1 or 2?	Pipe Sizes	No. of Pipes	Storm
1	225	1	Minor 1
2	300	2	Minor 2
	375	3	Major
	450	4	Overland
	525	5	
	600		
	675		
	750		
	825		
	900		
	1050		
	1200		
	1350		
	1500		
	1650		
	1800		

## PEAK FLOW CALCULATION SHEET RATIONAL METHOD, ARR16

**Job Name:** Axxess Corporate Park, Mount Waverley  
**Job Number:** 22058  
**Compiled by:** S Khaji  
**Date:** 9/09/2022

ARI (1 in x years)	AEP (%)	FREQUENCY FAEP
100	1	1.20
50	2	1.15
20	5	1.05
10	10	1.00
5	18.13	0.95
4.48	20	0.94
2	50	0.85
1	63.21	0.80

Job Name: Corporate Park, Mount Waverley  
 Job Number: 22058  
 Compiled by: S Khaji  
 Date: 9/09/2022

IFD DATA - FREQUENT AND INFREQUENT EVENTS

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IFD Design Rainfall Intensity (mm/h)

Issued: 9-Sep-22  
 Location  
 Requested coordinate Latitude -37.8973 Longitude 145.12982  
 Nearest grid cell: Latitude 37.8875 (S) Longitude 145.1375 (E)

IFD DATA - FREQUENT AND INFREQUENT EVENTS

Copyright Commonwealth of Australia 2016 Bureau of Meteorology (ABN 92 637 533 532)

Very Frequent Design Rainfall Intensity (mm/h)

Issued: 9-Sep-22  
 Location  
 Requested coordinate Latitude -37.8973 Longitude 145.12982  
 Nearest grid cell: Latitude 37.8875 (S) Longitude 145.1375 (E)

Annual Exceedance Probability (AEP)									Exceedance per Year (EY)									
Duration	Duration in min	63.20%	50%	20%	10%	5%	2%	1%	Duration	Duration in min	12EY	6EY	4EY	3EY	2EY	1EY	0.5EY	0.2EY
1 min	1	96.2	108	146	174	204	247	282	1 min	1	37.1	42.5	52.5	60.3	72.3	96.2	119	149
2 min	2	82.1	91.4	123	145	167	195	218	2 min	2	33.1	37.8	46.3	52.9	62.9	82.1	101	125
3 min	3	73.7	82	110	130	151	178	199	3 min	3	29.8	34	41.7	47.6	56.5	73.7	91.1	112
4 min	4	67.3	75	101	120	139	165	187	4 min	4	27.2	31	38.1	43.5	51.6	67.3	83.2	103
5 min	5	62.1	69.3	93.6	111	130	155	176	5 min	5	25.1	28.7	35.2	40.1	47.7	62.1	77	95.5
10 min	10	46.1	51.6	70.2	84.1	98.7	120	138	10 min	10	18.9	21.5	26.3	29.9	35.4	46.1	57.2	71.6
15 min	15	37.4	41.9	57.1	68.6	80.6	98.3	113	15 min	15	15.7	17.7	21.6	24.5	28.9	37.4	46.5	58.3
20 min	20	31.9	35.7	48.7	58.4	68.6	83.5	96	20 min	20	13.6	15.3	18.5	21	24.7	31.9	39.6	49.6
25 min	25	28	31.3	42.6	51.1	60	72.9	83.6	25 min	25	12.1	13.6	16.4	18.5	21.8	28	34.8	43.5
30 min	30	25.1	28	38.1	45.6	53.5	64.8	74.2	30 min	30	11	12.3	14.8	16.7	19.6	25.1	31.1	38.9
45 min	45	19.5	21.8	29.4	35	40.9	49.2	56	45 min	45	8.74	9.78	11.7	13.1	15.3	19.5	24.2	30
1 hour	60	16.2	18.1	24.3	28.8	33.6	40.1	45.5	1 hour	60	7.4	8.27	9.84	11	12.8	16.2	20.1	24.8
1.5 hour	90	12.5	13.9	18.5	21.8	25.2	29.9	33.7	1.5 hour	90	5.81	6.47	7.68	8.59	9.94	12.5	15.4	18.8
2 hour	120	10.4	11.5	15.2	17.9	20.6	24.3	27.3	2 hour	120	4.86	5.41	6.42	7.17	8.28	10.4	12.7	15.5
3 hour	180	7.95	8.79	11.5	13.5	15.5	18.3	20.5	3 hour	180	3.76	4.19	4.96	5.54	6.39	7.95	9.75	11.8
4.5 hour	270	6.1	6.74	8.8	10.3	11.8	13.9	15.5	4.5 hour	270	2.88	3.22	3.82	4.26	4.92	6.1	7.48	8.98
6 hour	360	5.06	5.59	7.29	8.5	9.73	11.5	12.9	6 hour	360	2.38	2.66	3.16	3.53	4.08	5.06	6.2	7.44
9 hour	540	3.88	4.29	5.62	6.56	7.5	8.89	10	9 hour	540	1.8	2.02	2.41	2.7	3.12	3.88	4.77	5.73
12 hour	720	3.21	3.56	4.68	5.47	6.28	7.47	8.42	12 hour	720	1.48	1.66	1.98	2.22	2.57	3.21	3.95	4.77
18 hour	1080	2.45	2.72	3.62	4.26	4.9	5.86	6.63	18 hour	1080	1.11	1.25	1.5	1.68	1.95	2.45	3.02	3.69
24 hour	1440	2.01	2.24	3.01	3.56	4.11	4.93	5.59	24 hour	1440	0.901	1.01	1.22	1.37	1.59	2.01	2.49	3.08
30 hour	1800	1.71	1.92	2.61	3.09	3.59	4.3	4.88	30 hour	1800	0.765	0.861	1.03	1.16	1.36	1.71	2.14	2.66
36 hour	2160	1.5	1.69	2.31	2.75	3.2	3.84	4.35	36 hour	2160	0.669	0.752	0.903	1.02	1.19	1.5	1.88	2.36
48 hour	2880	1.22	1.38	1.9	2.27	2.65	3.18	3.59	48 hour	2880	0.539	0.606	0.728	0.82	0.957	1.22	1.53	1.94
72 hour	4320	0.894	1.01	1.41	1.7	1.99	2.38	2.68	72 hour	4320	0.395	0.444	0.533	0.601	0.702	0.894	1.12	1.44
96 hour	5760	0.713	0.808	1.12	1.35	1.59	1.89	2.12	96 hour	5760	0.316	0.355	0.427	0.481	0.562	0.713	0.897	1.14
120 hour	7200	0.597	0.674	0.927	1.11	1.31	1.56	1.75	120 hour	7200	0.265	0.299	0.359	0.405	0.472	0.597	0.748	0.945
144 hour	8640	0.516	0.579	0.785	0.941	1.11	1.31	1.47	144 hour	8640	0.229	0.259	0.313	0.352	0.41	0.516	0.643	0.801
168 hour	10080	0.455	0.508	0.677	0.808	0.949	1.13	1.27	168 hour	10080	0.202	0.229	0.278	0.314	0.365	0.455	0.564	0.69



**Job Name:** Axxess Corporate Park, Mount Waverley  
**Job Number:** 22058  
**Compiled by:** S Khaji  
**Date:** 9/09/2022

**IFD DATA - RARE EVENTS**

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IFD Design Rainfall Intensity (mm/h)

Issued: 9-Sep-22

Location

Requested coordinate Latitude -37.8973 Longitude 145.12982  
 Nearest grid cell: Latitude 37.8875 (S) Longitude 145.1375 (E)

Duration	Duration in min	Annual Exceedance Probability (AEP)						
		63.20%	50%	20%	10%	5%	2%	1%
1 min	1	96.2	108.0	146.0	174.0	204.0	247.0	282.0
2 min	2	82.1	91.4	123.0	145.0	167.0	195.0	218.0
3 min	3	73.7	82.0	110.0	130.0	151.0	178.0	199.0
4 min	4	67.3	75.0	101.0	120.0	139.0	165.0	187.0
5 min	5	62.1	69.3	93.6	111.0	130.0	155.0	176.0
10 min	10	46.1	51.6	70.2	84.1	98.7	120.0	138.0
15 min	15	37.4	41.9	57.1	68.6	80.6	98.3	113.0
20 min	20	31.9	35.7	48.7	58.4	68.6	83.5	96.0
25 min	25	28.0	31.3	42.6	51.1	60.0	72.9	83.6
30 min	30	25.1	28.0	38.1	45.6	53.5	64.8	74.2
45 min	45	19.5	21.8	29.4	35.0	40.9	49.2	56.0
1 hour	60	16.2	18.1	24.3	28.8	33.6	40.1	45.5
1.5 hour	90	12.5	13.9	18.5	21.8	25.2	29.9	33.7
2 hour	120	10.4	11.5	15.2	17.9	20.6	24.3	27.3
3 hour	180	8.0	8.8	11.5	13.5	15.5	18.3	20.5
4.5 hour	270	6.1	6.7	8.8	10.3	11.8	13.9	15.5
6 hour	360	5.1	5.6	7.3	8.5	9.7	11.5	12.9
9 hour	540	3.9	4.3	5.6	6.6	7.5	8.9	10.0
12 hour	720	3.2	3.6	4.7	5.5	6.3	7.5	8.4
18 hour	1080	2.5	2.7	3.6	4.3	4.9	5.9	6.6
24 hour	1440	2.01	2.24	3.01	3.56	4.11	4.93	5.59
30 hour	1800	1.71	1.92	2.61	3.09	3.59	4.3	4.88
36 hour	2160	1.5	1.69	2.31	2.75	3.2	3.84	4.35
48 hour	2880	1.22	1.38	1.9	2.27	2.65	3.18	3.59
72 hour	4320	0.894	1.01	1.41	1.7	1.99	2.38	2.68
96 hour	5760	0.713	0.808	1.12	1.35	1.59	1.89	2.12
120 hour	7200	0.597	0.674	0.927	1.11	1.31	1.56	1.75
144 hour	8640	0.516	0.579	0.785	0.941	1.11	1.31	1.47
168 hour	10080	0.455	0.508	0.677	0.808	0.949	1.13	1.27

**IFD DATA - FREQUENT AND INFREQUENT EVENTS**

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Rare Design Rainfall Intensity (mm/h)

Issued: 9-Sep-22

Location

Requested c Latitude -37.8973 Longitude 145.12982  
 Nearest grid Latitude 37.8875 (S) Longitude 145.1375 (E)

Duration	Duration in min	Exceedance per Year (EY)				
		1 in 100	1 in 200	1 in 500	1 in 1000	1 in 2000
1 min	1	282.0	328.0	384.0	430.0	480.0
2 min	2	218.0	248.0	287.0	319.0	353.0
3 min	3	199.0	228.0	265.0	295.0	327.0
4 min	4	187.0	215.0	250.0	280.0	311.0
5 min	5	176.0	204.0	238.0	266.0	296.0
10 min	10	138.0	160.0	188.0	211.0	236.0
15 min	15	113.0	132.0	155.0	173.0	194.0
20 min	20	96.0	112.0	131.0	147.0	164.0
25 min	25	83.6	97.1	114.0	127.0	142.0
30 min	30	74.2	86.0	101.0	113.0	126.0
45 min	45	56.0	64.8	75.7	84.7	94.3
1 hour	60	45.5	52.5	61.3	68.6	76.3
1.5 hour	90	33.7	39.0	45.5	50.9	56.6
2 hour	120	27.3	31.6	37.0	41.3	46.0
3 hour	180	20.5	23.8	27.8	31.2	34.8
4.5 hour	270	15.5	18.1	21.2	23.8	26.6
6 hour	360	12.9	15.0	17.7	19.9	22.3
9 hour	540	10.0	11.7	13.8	15.5	17.4
12 hour	720	8.4	9.9	11.6	13.1	14.7
18 hour	1080	6.6	7.7	9.1	10.2	11.4
24 hour	1440	5.59	6.48	7.59	8.5	9.49
30 hour	1800	4.88	5.64	6.58	7.35	8.17
36 hour	2160	4.35	5	5.81	6.46	7.16
48 hour	2880	3.59	4.08	4.7	5.2	5.72
72 hour	4320	2.68	2.98	3.4	3.72	4.06
96 hour	5760	2.12	2.34	2.65	2.89	3.14
120 hour	7200	1.75	1.92	2.17	2.37	2.57
144 hour	8640	1.47	1.62	1.84	2	2.17
168 hour	10080	1.27	1.4	1.59	1.74	1.89

**Job Name:** Axxess Corporate Park, Mount Waverley  
**Job Number:** 22058  
**Compiled by:** S Khaji  
**Date:** 9/09/2022

### Rational Method using ARR16 terminology

$$Q_{AEP} = C_{AEP} \times {}^{AEP}I_{tc} \times A / 360$$

**Where**  $Q_{AEP}$  = design discharge for annual exceedance probability (AEP) ( $m^3/s$ )  
 $C$  = runoff coefficient for annual exceedance probability, AEP  
 ${}^{AEP}I_{tc}$  = rainfall intensity for the event and duration required (mm/h)  
 $A$  = catchment area (ha)

$$C'_{10} = 0.1 + 0.0133 ( {}^{10}I_1 - 25 )$$

**Where**  $C'_{10}$  is the pervious runoff coefficient  
 ${}^{10}I_1$  is the 10 % AEP, 1 hour duration rainfall intensity (mm/h)

And,

$$C_{10} = 0.9f + C'_{10}(1-f)$$

**Where**  $C_{10}$  is the 10 % AEP runoff coefficient  
 $f$  is the fraction impervious (0.0 to 1.0)

And,

$$C_Y = F_Y C_{10}$$

**Where**  $C_Y$  is an average recurrence interval  
 $F_{AEP}$  is a frequency factor

### Rational Method Calculation

#### Known catchment area, ha

A = 8.2 ha

#### Determination of $C'_{10}$ value

$${}^{10\%}I_{1h} = 28.80$$

$$C'_{10} = 0.151$$

#### Determination of $C_{10}$ value

$$f = 0.900 \quad \text{Based on aerial imagery}$$

$$C_{10} = 0.825$$

#### Calculation of runoff coefficient, C, for event, AEP

$$AEP = 0.2$$

$$F_{AEP} = 1.35$$

$$C_{AEP} = 1.114$$

#### Determination of Rainfall intensity at site based on BOM data

$$t_c = 20 \quad \text{min}$$

$${}^{AEP}I_{20} = 131 \quad \text{mm/h}$$

Based on 5 min for initiation time, and 857 metres (est) of pipe flow at assumed 1 m/s velocity, rounded down to 20 mins

#### Calculation of design discharge from site ( $m^3/s$ )

$$Q_{AEP} = 2.984$$

**Job Name:** Axxess Corporate Park, Mount Waverley  
**Job Number:** 22058  
**Compiled by:** S Khaji  
**Date:** 9/09/2022

### Rational Method using ARR16 terminology

$$Q_{AEP} = C_{AEP} \times I_{tc}^{AEP} \times A / 360$$

**Where**  $Q_{AEP}$  = design discharge for annual exceedance probability (AEP) ( $m^3/s$ )  
 $C$  = runoff coefficient for annual exceedance probability, AEP  
 $I_{tc}^{AEP}$  = rainfall intensity for the event and duration required (mm/h)  
 $A$  = catchment area (ha)

$$C'_{10} = 0.1 + 0.0133 ( {}^{10}I_1 - 25 )$$

**Where**  $C'_{10}$  is the pervious runoff coefficient  
 ${}^{10}I_1$  is the 10 % AEP, 1 hour duration rainfall intensity (mm/h)

And,

$$C_{10} = 0.9f + C'_{10}(1-f)$$

**Where**  $C_{10}$  is the 10 % AEP runoff coefficient  
 $f$  is the fraction impervious (0.0 to 1.0)

And,

$$C_Y = F_Y C_{10}$$

**Where**  $C_Y$  is an average recurrence interval  
 $F_{AEP}$  is a frequency factor

### Rational Method Calculation

#### Known catchment area, ha

A = 6.1 ha

#### Determination of $C'_{10}$ value

$${}^{10\%}I_{1h} = 28.80$$

$$C'_{10} = 0.151$$

#### Determination of $C_{10}$ value

$$f = 0.877 \quad \text{Based on layout plan}$$

$$C_{10} = 0.808$$

#### Calculation of runoff coefficient, C, for event, AEP

$$AEP = 0.2$$

$$F_{AEP} = 1.35$$

$$C_{AEP} = 1.091$$

*Runoff coefficient of > 1.0 is numerically possible, though conservative as not-physically possible (runoff volume > rainfall volume)*

#### Determination of Rainfall intensity at site based on BOM data

$$t_c = 14 \quad \text{min}$$

$${}^{AEP}I_{14} = 160 \quad \text{mm/h}$$

*Based on 5 min for initiation time, and 580 metres (est) of overland flow at assumed 1 m/s velocity, rounded down to 14 mins*

#### Calculation of design discharge from site ( $m^3/s$ )

$$Q_{AEP} = 2.711$$

**Job Name:** Axxess Corporate Park, Mount Waverley  
**Job Number:** 22058  
**Compiled by:** S Khaji  
**Date:** 9/09/2022

### Rational Method using ARR16 terminology

$$Q_{AEP} = C_{AEP} \times {}^{AEP}I_{tc} \times A / 360$$

**Where**  $Q_{AEP}$  = design discharge for annual exceedance probability (AEP) ( $m^3/s$ )  
 $C$  = runoff coefficient for annual exceedance probability, AEP  
 ${}^{AEP}I_{tc}$  = rainfall intensity for the event and duration required (mm/h)  
 $A$  = catchment area (ha)

$$C'_{10} = 0.1 + 0.0133 ( {}^{10}I_1 - 25 )$$

**Where**  $C'_{10}$  is the pervious runoff coefficient  
 ${}^{10}I_1$  is the 10 % AEP, 1 hour duration rainfall intensity (mm/h)

**And,**

$$C_{10} = 0.9f + C'_{10}(1-f)$$

**Where**  $C_{10}$  is the 10 % AEP runoff coefficient  
 $f$  is the fraction impervious (0.0 to 1.0)

**And,**

$$C_Y = F_Y C_{10}$$

**Where**  $C_Y$  is an average recurrence interval  
 $F_{AEP}$  is a frequency factor

### Rational Method Calculation

#### Known catchment area, ha

$A = 6.1$  ha

#### Determination of $C'_{10}$ value

$${}^{10\%}I_{1h} = 28.80$$

$$C'_{10} = 0.151$$

#### Determination of $C_{10}$ value

$$f = 0.900 \text{ Based on aerial imagery}$$

$$C_{10} = 0.825$$

#### Calculation of runoff coefficient, $C$ , for event, AEP

$$AEP = 0.2$$

$$F_{AEP} = 1.35$$

$$C_{AEP} = 1.114$$

#### Determination of Rainfall intensity at site based on BOM data

$$t_c = 20 \text{ min}$$

$${}^{AEP}I_{20} = 131 \text{ mm/h}$$

Based on 5 min for initiation time, and 857 metres (est) of pipe flow at assumed 1 m/s velocity, rounded down to 20 mins

#### Calculation of design discharge from site ( $m^3/s$ )

$$Q_{AEP} = 2.220$$

**Job Name:** Axxess Corporate Park, Mount Waverley  
**Job Number:** 22058  
**Compiled by:** S Khaji  
**Date:** 9/09/2022

### Rational Method using ARR16 terminology

$$Q_{AEP} = C_{AEP} \times I_{tc}^{AEP} \times A / 360$$

**Where**  $Q_{AEP}$  = design discharge for annual exceedance probability (AEP) ( $m^3/s$ )  
 $C$  = runoff coefficient for annual exceedance probability, AEP  
 $I_{tc}^{AEP}$  = rainfall intensity for the event and duration required (mm/h)  
 $A$  = catchment area (ha)

$$C'_{10} = 0.1 + 0.0133 ( {}^{10}I_1 - 25 )$$

**Where**  $C'_{10}$  is the pervious runoff coefficient  
 ${}^{10}I_1$  is the 10 % AEP, 1 hour duration rainfall intensity (mm/h)

And,

$$C_{10} = 0.9f + C'_{10}(1-f)$$

**Where**  $C_{10}$  is the 10 % AEP runoff coefficient  
 $f$  is the fraction impervious (0.0 to 1.0)

And,

$$C_Y = F_Y C_{10}$$

**Where**  $C_Y$  is an average recurrence interval  
 $F_{AEP}$  is a frequency factor

### Rational Method Calculation

#### Known catchment area, ha

A = 6.1 ha

#### Determination of $C'_{10}$ value

$${}^{10\%}I_{1h} = 28.80$$

$$C'_{10} = 0.151$$

#### Determination of $C_{10}$ value

$$f = 0.900 \quad \text{Based on layout plan}$$

$$C_{10} = 0.825$$

#### Calculation of runoff coefficient, C, for event, AEP

$$AEP = 0.2$$

$$F_{AEP} = 1.35$$

$$C_{AEP} = 1.114$$

*Runoff coefficient of > 1.0 is numerically possible, though conservative as not-physically possible (runoff volume > rainfall volume)*

#### Determination of Rainfall intensity at site based on BOM data

$$t_c = 14 \quad \text{min}$$

$${}^{AEP}I_{14} = 160 \quad \text{mm/h}$$

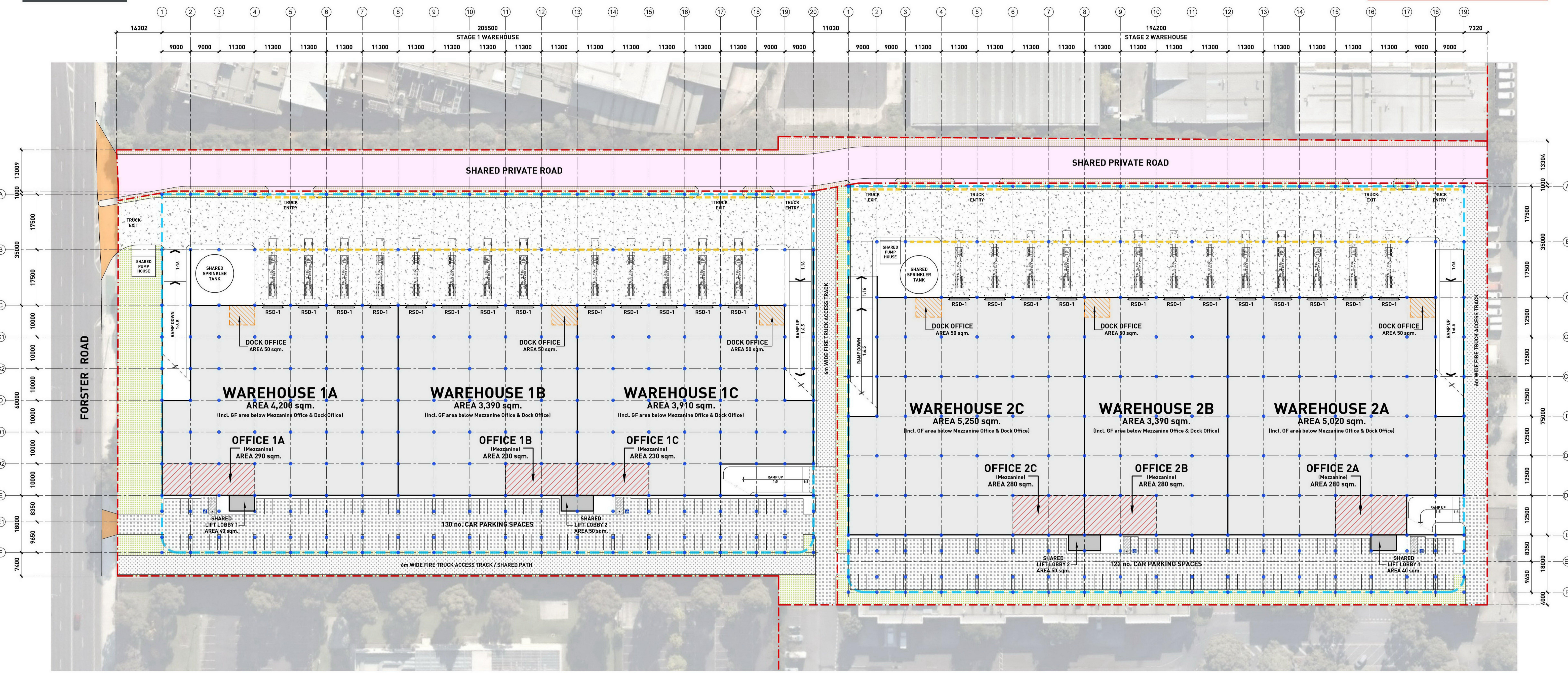
*Based on 5 min for initiation time, and 580 metres (est) of overland flow at assumed 1 m/s velocity, rounded down to 14 mins*

#### Calculation of design discharge from site ( $m^3/s$ )

$$Q_{AEP} = 2.711$$












## **Appendix C: Development Plan**



TOTAL DEVELOPMENT SUMMARY	
Proposed Stage 1 Site Area	27,696 sqm. approx.
Proposed Stage 2 Site Area	27,264 sqm. approx.
Shared Private Road Area	5,910 sqm. approx.
<b>TOTAL SITE AREA</b>	<b>60,870 sqm. approx.</b>
Total Stage 1 Building Area	37,620 sqm.
Total Stage 2 Building Area	43,070 sqm.
<b>TOTAL BUILDING AREA</b>	<b>80,690 sqm.</b>
Total Heavy Duty Paving Area (Excl. Circulation Ramp Areas)	48,120 sqm. approx.
Total Light Duty Paving Area (Excl. Circulation Ramp Areas)	18,600 sqm. approx.
Total Super Awning Area	9,890 sqm. approx.
Total Car Parking Provided	722 spaces

AREA SUMMARY - STAGE 1 (Ground Floor)	
Warehouse 1A Area	4,200 sqm.
Office 1A Area (Mezzanine)	290 sqm.
Warehouse 1B Area	3,390 sqm.
Office 1B Area (Mezzanine)	230 sqm.
Warehouse 1C Area	3,910 sqm.
Office 1C Area (Mezzanine)	230 sqm.
Shared Lift Lobby 1 Area	40 sqm.
Shared Lift Lobby 2 Area	50 sqm.
<b>TOTAL BUILDING AREA</b>	<b>12,340 sqm.</b>
Total Heavy Duty Paving Area (Excl. Circulation Ramp Areas)	6,380 sqm. approx.
Total Light Duty Paving Area (Excl. Circulation Ramp Areas)	3,540 sqm. approx.
Total Car Parking Provided	130 spaces

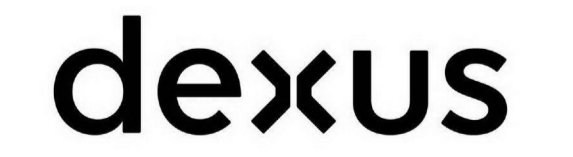
AREA SUMMARY - STAGE 2 (Ground Floor)	
Warehouse 2A Area	5,020 sqm.
Office 2A Area (Mezzanine)	280 sqm.
Warehouse 2B Area	3,390 sqm.
Office 2B Area (Mezzanine)	280 sqm.
Warehouse 2C Area	5,250 sqm.
Office 2C Area (Mezzanine)	280 sqm.
Shared Lift Lobby 1 Area	40 sqm.
Shared Lift Lobby 2 Area	50 sqm.
<b>TOTAL BUILDING AREA</b>	<b>14,590 sqm.</b>
Total Heavy Duty Paving Area (Excl. Circulation Ramp Areas)	5,920 sqm. approx.
Total Light Duty Paving Area (Excl. Circulation Ramp Areas)	3,220 sqm. approx.
Total Car Parking Provided	122 spaces

-  EXTENT OF HEAVY DUTY PAVING AREA
-  EXTENT OF LIGHT DUTY PAVING AREA
-  EXTENT OF CRUSHED ROCK PAVING AREA
-  EXTENT OF LANDSCAPE AREA
-  OUTLINE OF FLOOR ABOVE
-  EXTENT OF PROPOSED COLUMNS
-  EXTENT OF PROPOSED TRANSFER BEAMS ABOVE
-  RSD-1 ROLLER SHUTTER DOOR 6mW x 5mH
-  PROPOSED NEW CROSSOVERS

**NOTE:**

- This concept plan is intended for feasibility purposes only. No planning advice has been sought from statutory authorities in the preparation of this plan. All setbacks, site coverage, car parking numbers, landscape areas and the like are subject to statutory approval.
- No assurance is given as to the features, attributes, feasibility or accuracy of anything shown on or disclosed in this plan.
- All existing & proposed features, dimensions, areas and boundaries are approximate only and subject to verification via detailed site survey by licensed surveyor.

CLIENT:

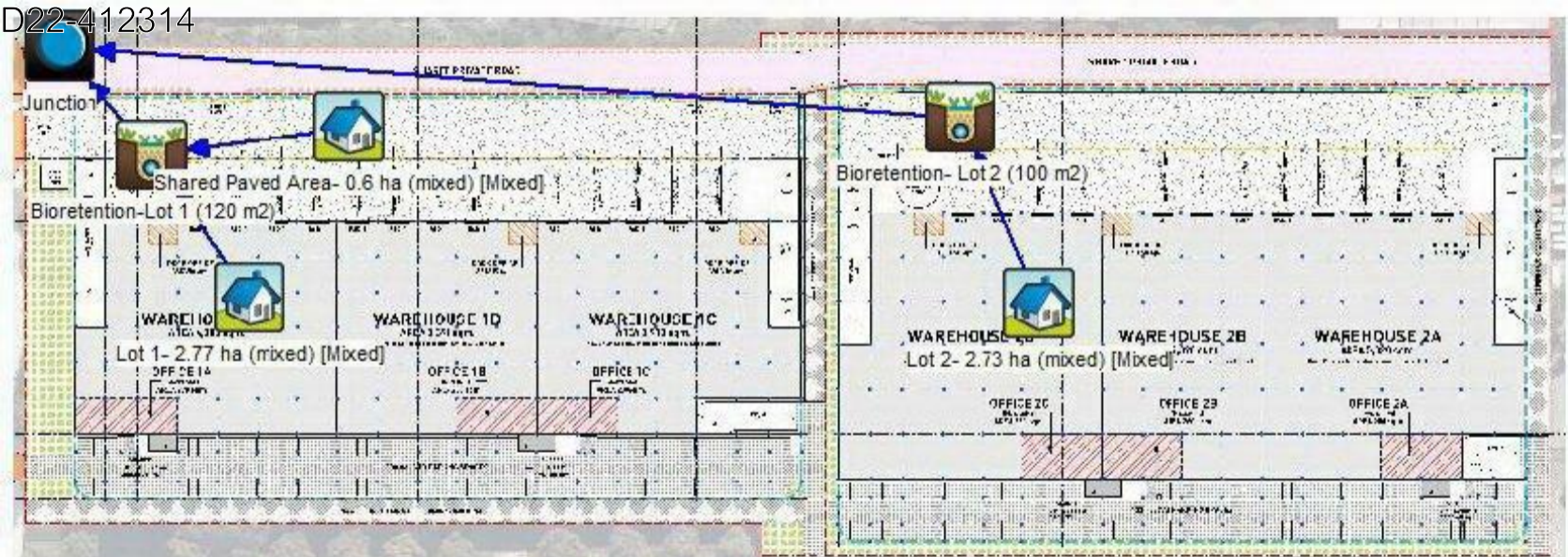




## **Appendix D: MUSIC Model Inputs and Results**



D22-412314



Junction

WEST STREET FRONT

NORTH STREET FRONT

Shared Paved Area- 0.6 ha (mixed) [Mixed]

Bioretention-Lot 1 (120 m<sup>2</sup>)

Bioretention- Lot 2 (100 m<sup>2</sup>)

Lot 1- 2.77 ha (mixed) [Mixed]

Lot 2- 2.73 ha (mixed) [Mixed]

WAREHOUSE 1A

WAREHOUSE 1B

WAREHOUSE 1C

WAREHOUSE 2A

WAREHOUSE 2B

WAREHOUSE 2C

OFFICE 1A

OFFICE 1B

OFFICE 1C

OFFICE 2A

OFFICE 2B

OFFICE 2C

	<b>Sources</b>	<b>Residual Load</b>	<b>% Reduction</b>
<b>Flow (ML/yr)</b>	35.5	35	1.3
<b>Total Suspended Solids (kg/yr)</b>	7230	1350	81.3
<b>Total Phosphorus (kg/yr)</b>	14.6	5.75	60.6
<b>Total Nitrogen (kg/yr)</b>	102	51	50
<b>Gross Pollutants (kg/yr)</b>	1430	0	100

## Source nodes

Location, Lot 1- 2.77 ha (mixed), Lot 2- 2.73 ha (mixed), Shared Paved Area- 0.6 ha (mixed)

ID, 1, 4, 6

Node Type, UrbanSourceNode, UrbanSourceNode, UrbanSourceNode

Zoning Surface Type, Mixed, Mixed, Mixed

Total Area (ha), 2.77, 2.73, 0.59

Area Impervious (ha), 2.49155298507463, 2.45557388059702, 0.530691791044776

Area Pervious (ha), 0.278447014925372, 0.274426119402984, 0.0593082089552237

Field Capacity (mm), 50, 50, 50

Pervious Area Infiltration Capacity coefficient - a, 200, 200, 200

Pervious Area Infiltration Capacity exponent - b, 1, 1, 1

Impervious Area Rainfall Threshold (mm/day), 1, 1, 1

Pervious Area Soil Storage Capacity (mm), 120, 120, 120

Pervious Area Soil Initial Storage (% of Capacity), 25, 25, 25

Groundwater Initial Depth (mm), 10, 10, 10

Groundwater Daily Recharge Rate (%), 25, 25, 25

Groundwater Daily Baseflow Rate (%), 5, 5, 5

Groundwater Daily Deep Seepage Rate (%), 0, 0, 0

Stormflow Total Suspended Solids Mean (log mg/L), 2.2, 2.2, 2.2

Stormflow Total Suspended Solids Standard Deviation (log mg/L), 0.32, 0.32, 0.32

Stormflow Total Suspended Solids Estimation

Method, Stochastic, Stochastic, Stochastic

Stormflow Total Suspended Solids Serial Correlation, 0, 0, 0

Stormflow Total Phosphorus Mean (log mg/L), -0.45, -0.45, -0.45

Stormflow Total Phosphorus Standard Deviation (log mg/L), 0.25, 0.25, 0.25

Stormflow Total Phosphorus Estimation Method, Stochastic, Stochastic, Stochastic

Stormflow Total Phosphorus Serial Correlation, 0, 0, 0

Stormflow Total Nitrogen Mean (log mg/L), 0.42, 0.42, 0.42

Stormflow Total Nitrogen Standard Deviation (log mg/L), 0.19, 0.19, 0.19

Stormflow Total Nitrogen Estimation Method, Stochastic, Stochastic, Stochastic

Stormflow Total Nitrogen Serial Correlation, 0, 0, 0

Baseflow Total Suspended Solids Mean (log mg/L), 1.1, 1.1, 1.1

Baseflow Total Suspended Solids Stan



# Appendix C

## Daylight Summary

This Daylight Summary provides an overview of the daylight study conducted through Green Star Hand Calculation method for the proposed development.

The project team is aiming to provide best practice daylight levels to the office spaces in the development, specifically:

- > BESS >33% of the regularly used area achieves a daylight factor of at least 2.0.

The Regularly used areas are defined as;

- > All spaces a person is expected to work or remain for an extended period

Spaces that have been excluded from the assessment:

- > In this project 20% of the total floor area is considered to be either transient spaces or accessed intermittently.

The table below shows the results of the daylight study for the regularly used areas in the offices, indicating 37.0% of the regularly used area achieves a daylight factor greater than 2.0.

Tenant	Total Floor Area (m <sup>2</sup> )	Regularly Used Area (m <sup>2</sup> )	Floor Area > Daylight Factor 2.0% (m <sup>2</sup> )	Compliant Floor Area %
<b>Building 1</b>				
Dock Office A	38.5	30.8	11.9	30.9%
Dock Office B	38.5	30.8	11.9	30.9%
Dock Office C	38.5	30.8	11.9	30.9%
Dock Office D	38.5	30.8	17.5	45.5%
Dock Office E	38.5	30.8	11.9	30.9%
Dock Office F	38.5	30.8	15.5	40.3%
Dock Office G	38.5	30.8	17.5	45.5%
Dock Office H	38.5	30.8	11.9	30.9%
Dock Office I	38.5	30.8	15.5	40.3%
Office A	243.7	194.96	82.8	34.0%
Office B	180.6	144.48	51.1	28.3%
Office C	180.6	144.48	51.1	28.3%
Office D	439.7	351.76	146.2	33.2%
Office E	340.6	272.48	81.4	23.9%
Office F	340.6	272.48	81.4	23.9%
Office G	439.7	351.76	119.6	27.2%
Office H	340.6	272.48	65.2	19.1%
Office I	340.6	272.48	65.2	19.1%

Tenant	Total Floor Area (m <sup>2</sup> )	Regularly Used Area (m <sup>2</sup> )	Floor Area > Daylight Factor 2.0% (m <sup>2</sup> )	Compliant Floor Area %
<b>Building 2</b>				
Dock Office A	38.5	30.8	15.5	40.3%
Dock Office B	38.5	30.8	15.5	40.3%
Dock Office C	38.5	30.8	15.5	40.3%
Dock Office D	38.5	30.8	17.5	45.5%
Dock Office E	38.5	30.8	17.8	46.2%
Dock Office F	38.5	30.8	17.8	46.2%
Dock Office G	38.5	30.8	17.5	45.5%
Dock Office H	38.5	30.8	17.8	46.2%
Dock Office I	38.5	30.8	17.8	46.2%
Office A	237.4	189.92	43.5	18.3%
Office B	214	171.2	50.8	23.7%
Office C	214	171.2	50.8	23.7%
Office D	443.4	354.72	146.1	32.9%
Office E	340.7	272.56	81.4	23.9%
Office F	340.7	272.56	81.4	23.9%
Office G	443.4	354.72	207.6	46.8%
Office H	340.8	272.64	121.8	35.7%
Office I	340.8	272.64	121.8	35.7%
<b>Total</b>		<b>5163.92</b>	<b>1927.4</b>	<b>37%</b>

BESS Requirement	Project's Results	PASS?
To claim BESS Credit 1.4 Daylight Access – Non-Residential one must use a daylight modelling software or daylight calculations to show that minimum of 33% of regular use (by floor area) achieves the target daylight factor of 2%, assuming a uniform design sky of 10,000 lux.	37% of regularly used area (by floor area) achieves the target daylight factor of 2%.	Yes

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**NOTE:**

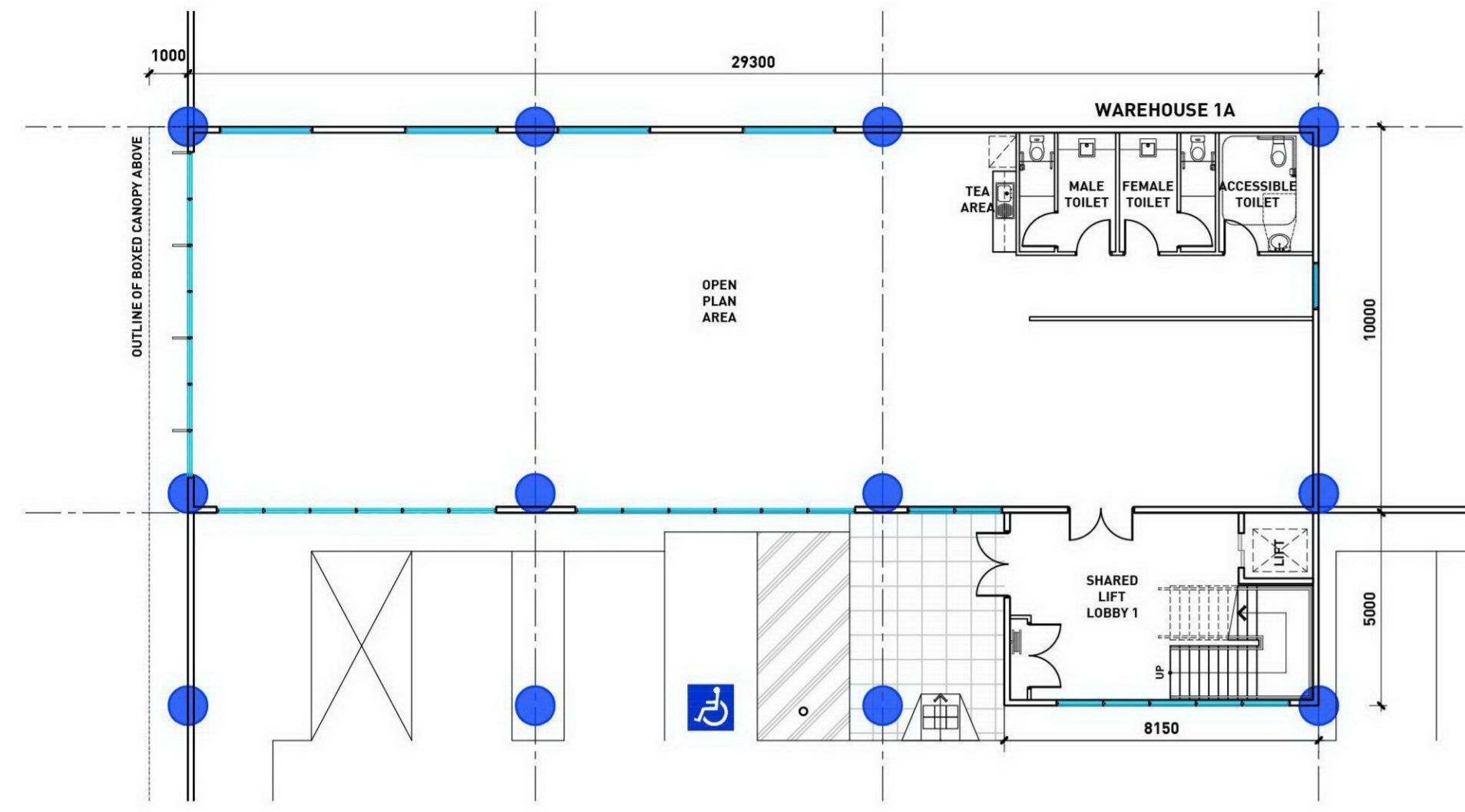
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**LEGEND**

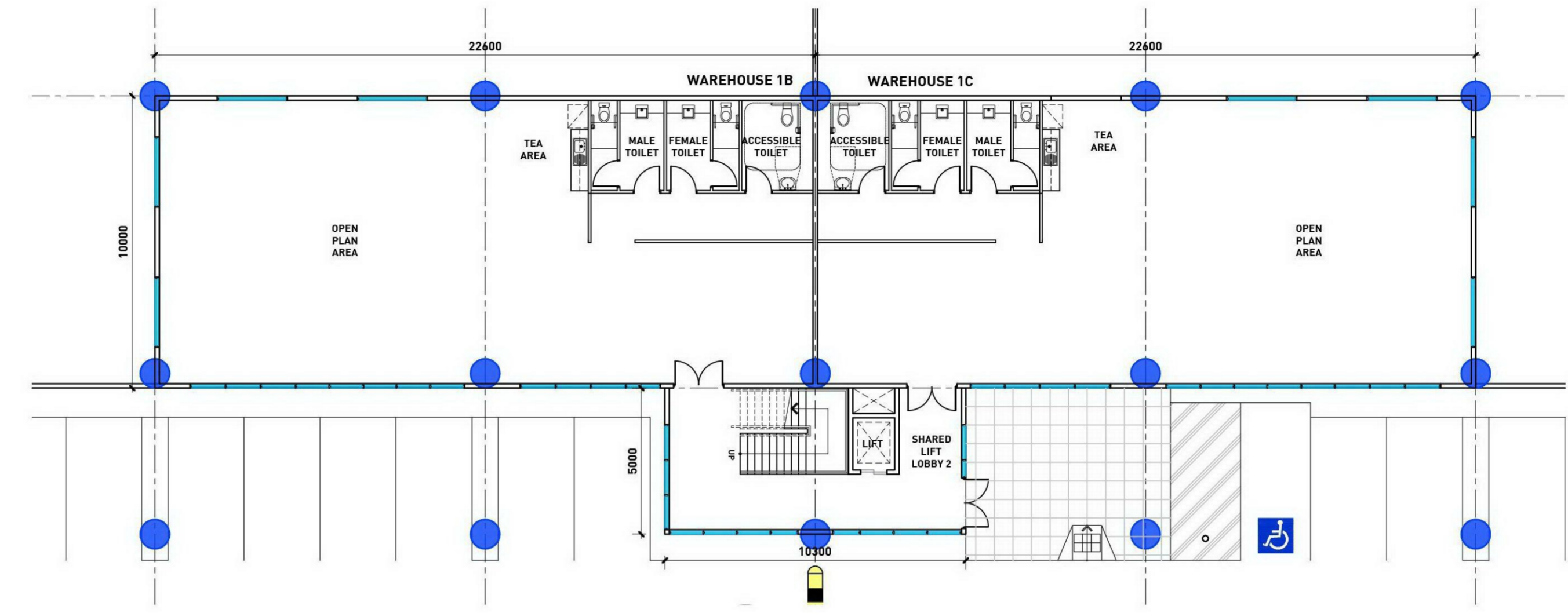
Total Area

Compliant Area

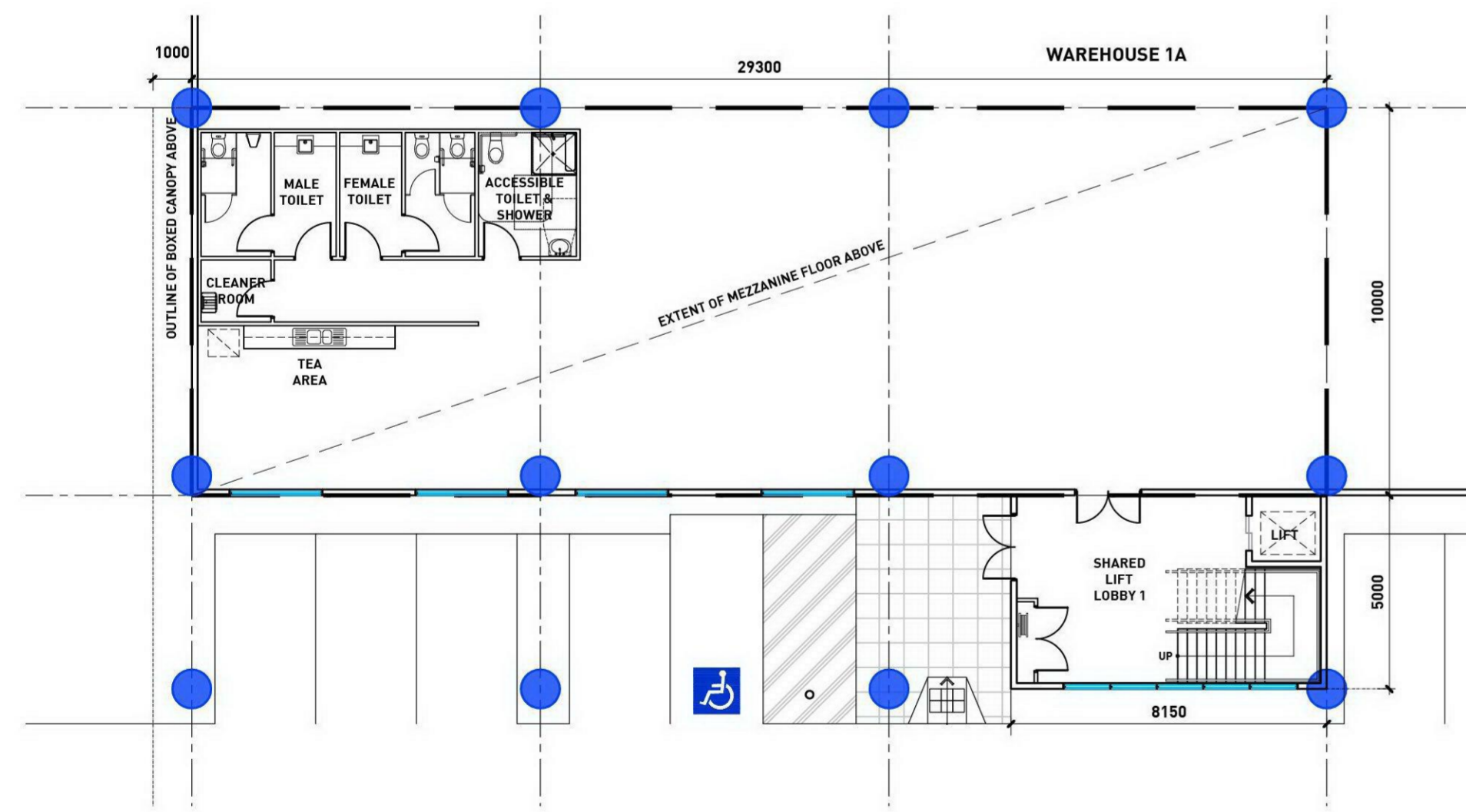
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SUBJECT TO STATUTORY APPROVAL



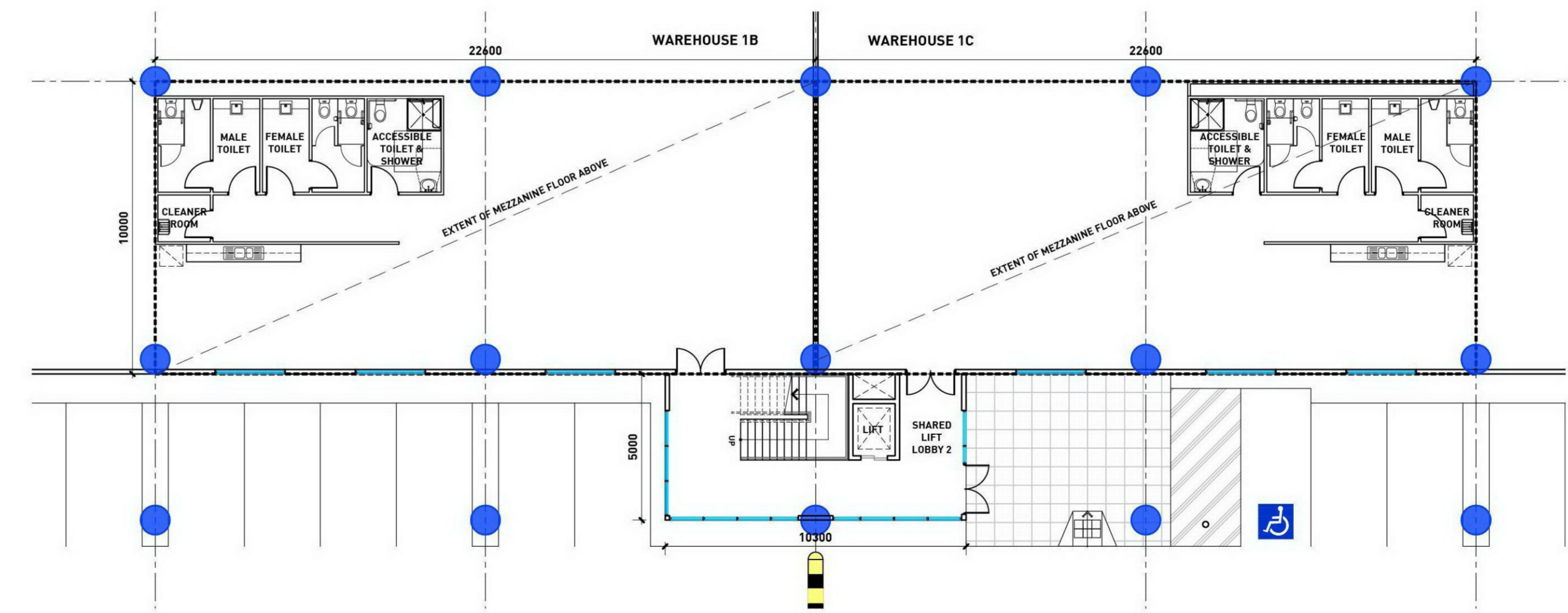
01 OFFICE 1A -MEZZANINE FLOOR PLAN



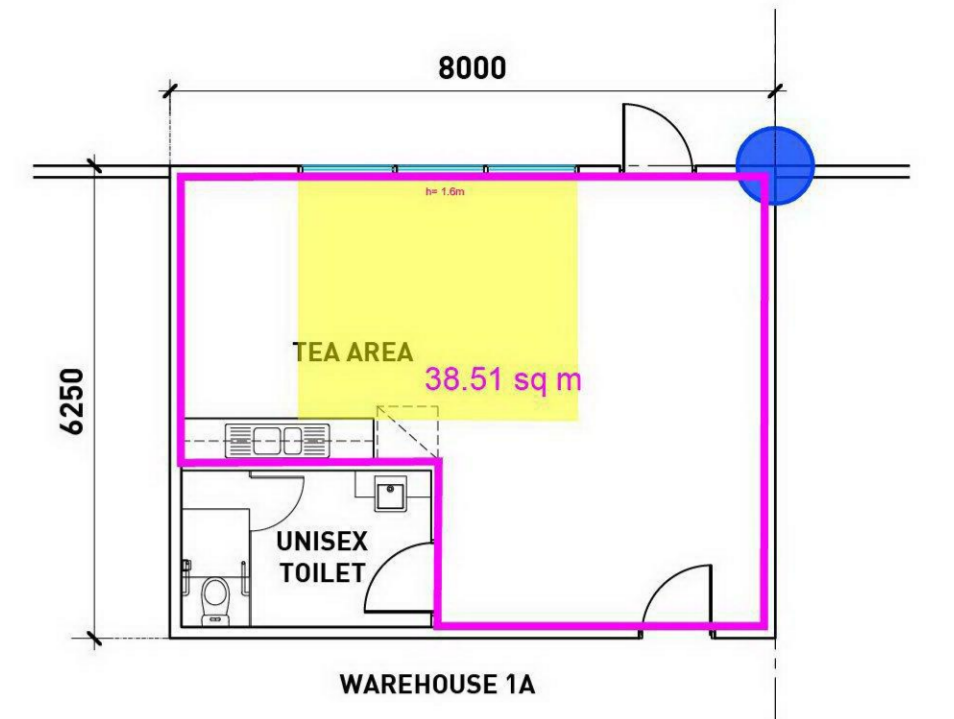
03 OFFICE 1B & 1C -MEZZANINE FLOOR PLAN



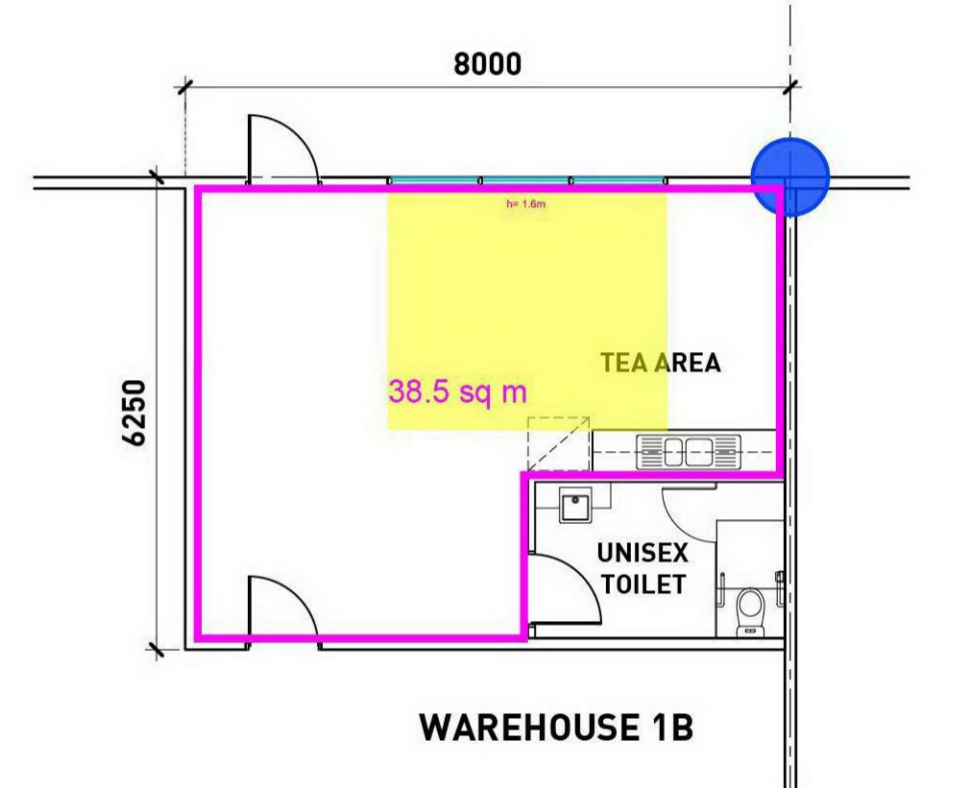
02 OFFICE 1A - GROUND FLOOR PLAN



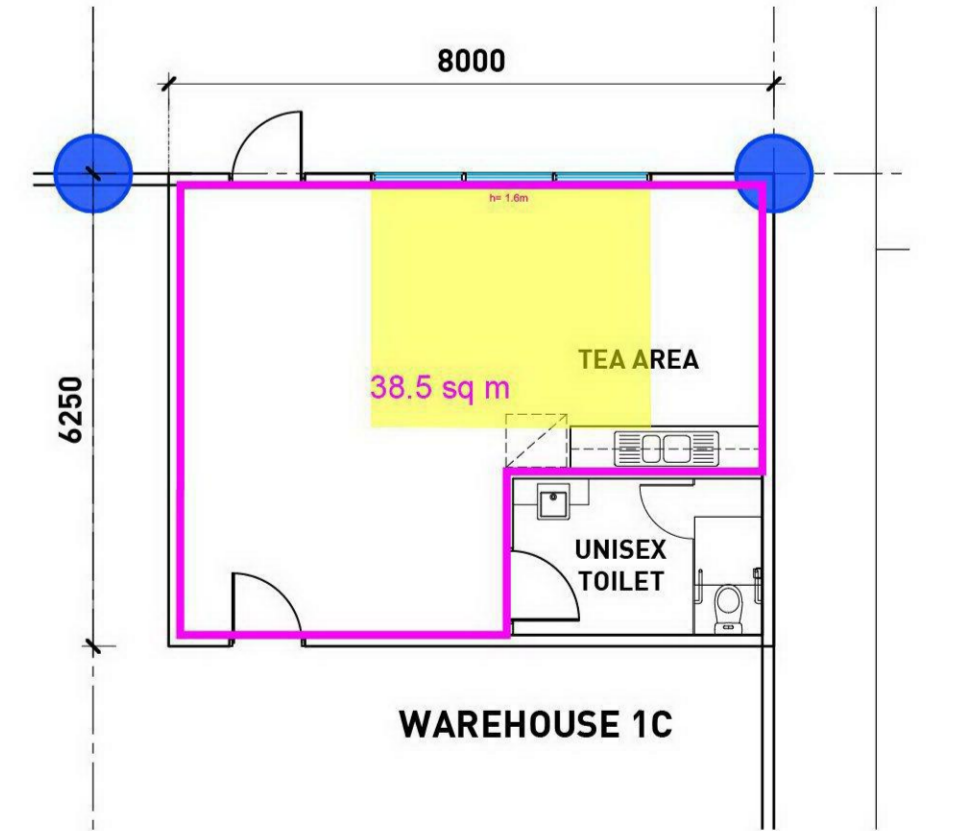
04 OFFICE 1B & 1C - GROUND FLOOR PLAN



05 DOCK OFFICE 1A FLOOR PLAN  
SCALE: 1:100



06 DOCK OFFICE 1B FLOOR PLAN  
SCALE: 1:100



07 DOCK OFFICE 1C FLOOR PLAN  
SCALE: 1:100

CLIENT:

**dexus**

**NOTE:**

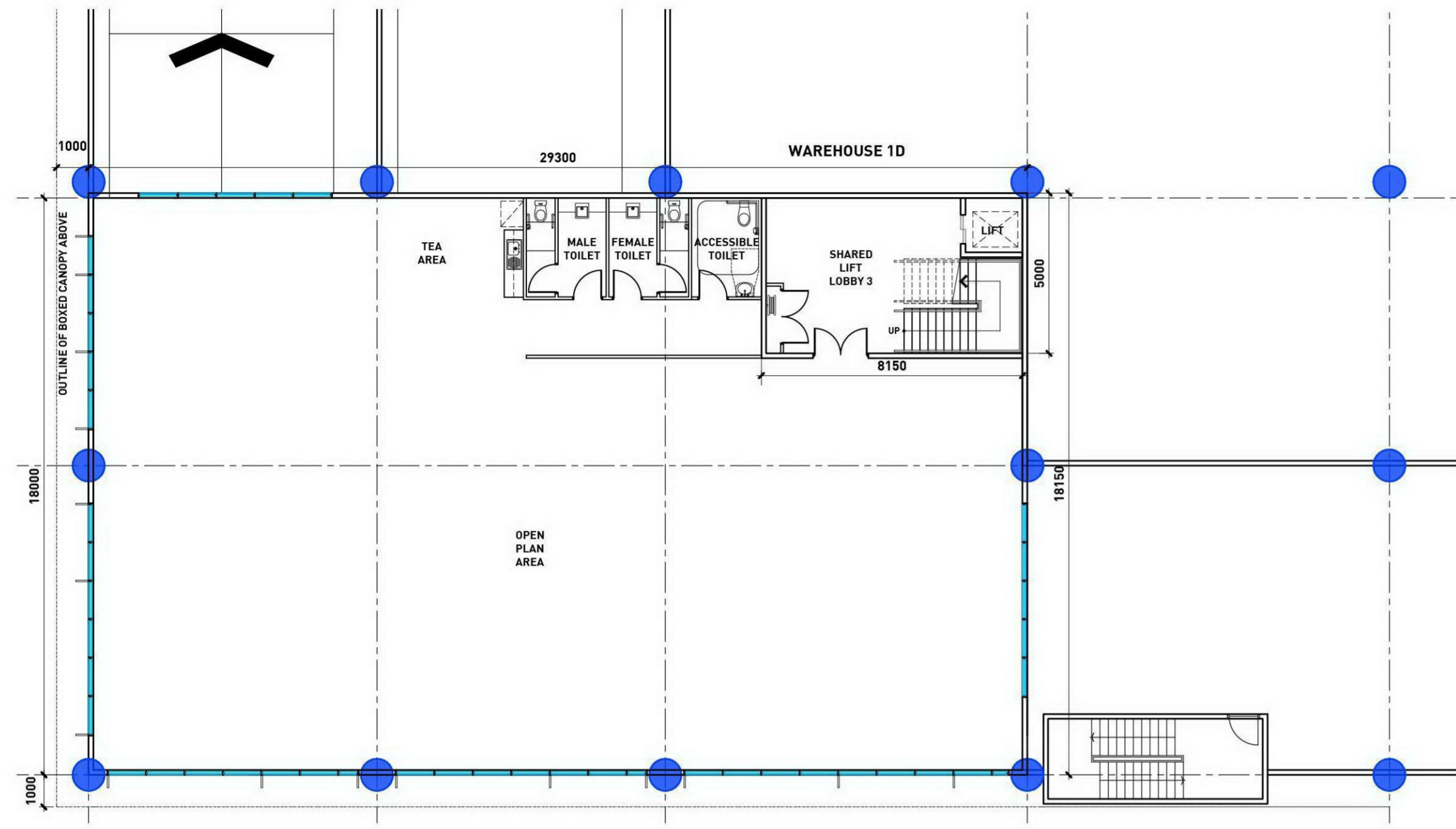
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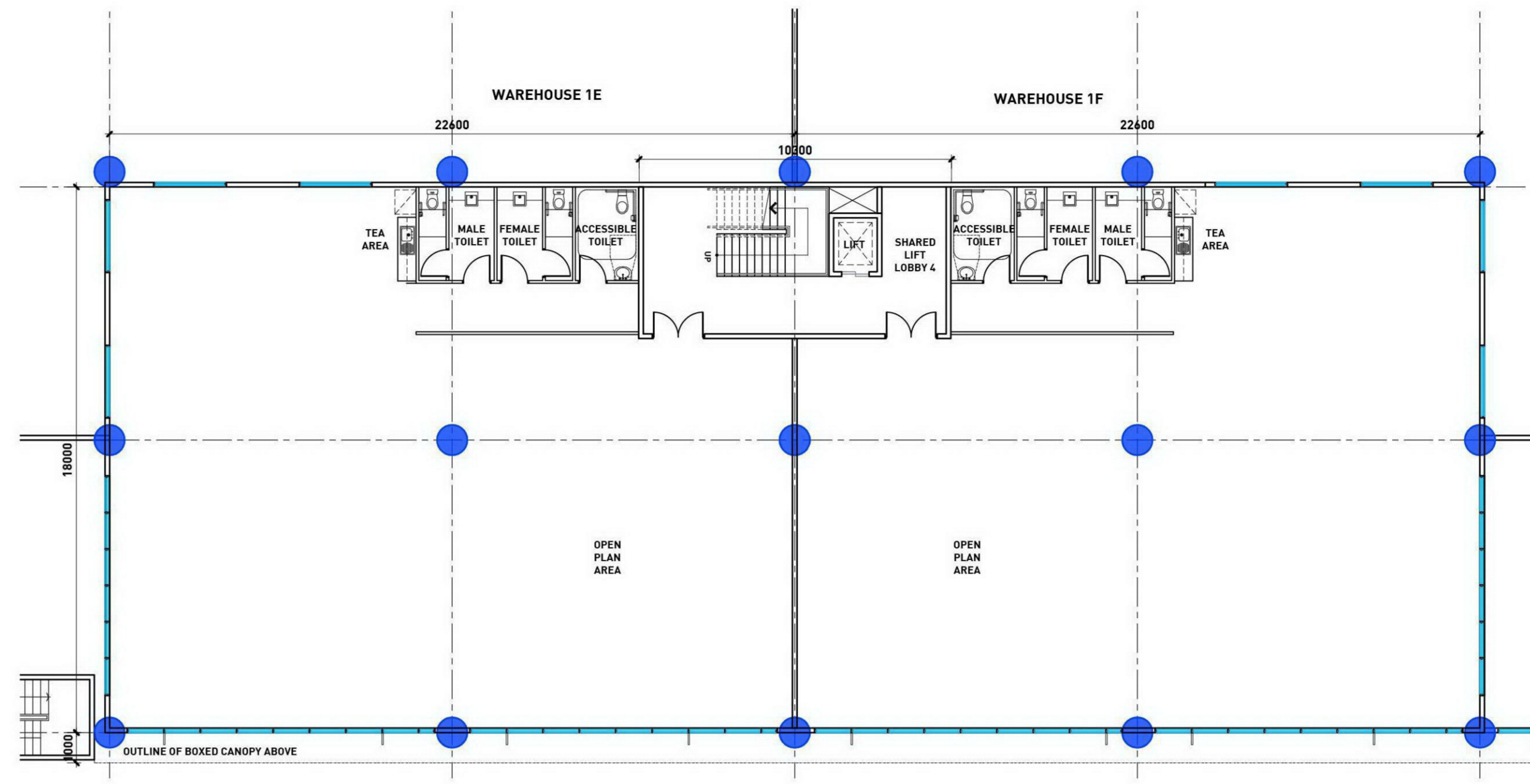
Total Area 

Compliant Area 

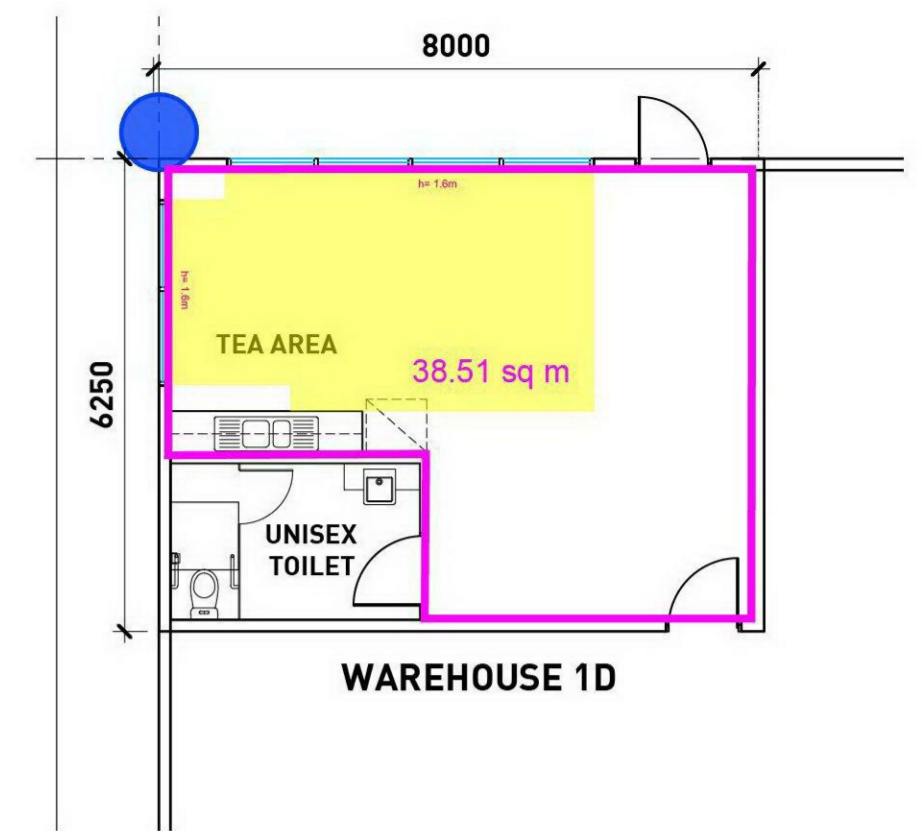
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SUBJECT TO STATUTORY APPROVAL



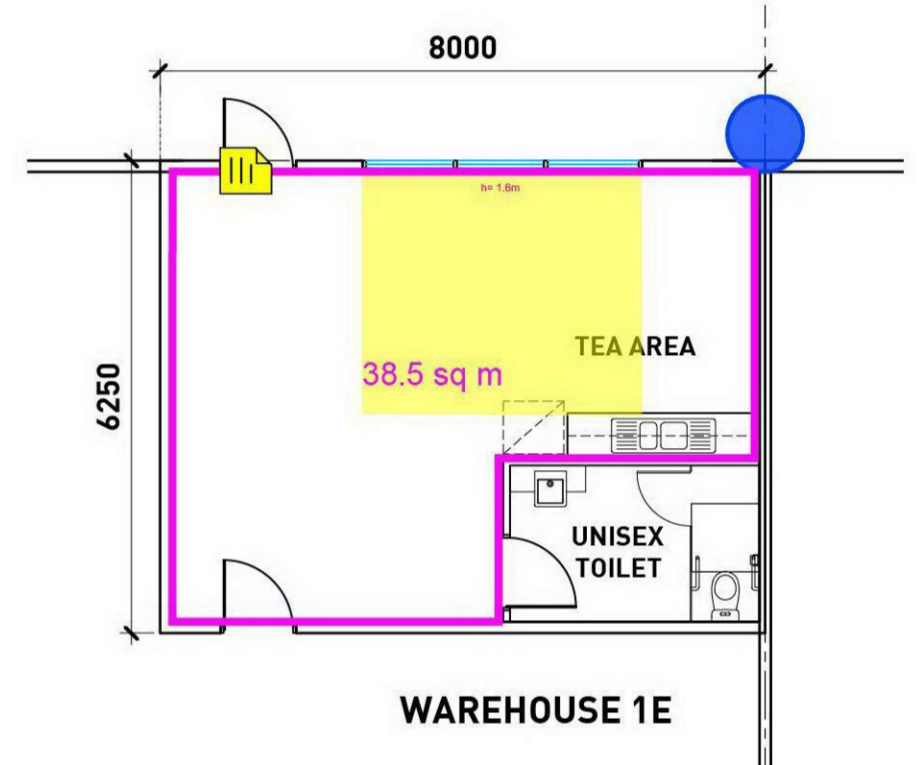
01 OFFICE 1D - FIRST FLOOR MEZZANINE PLAN



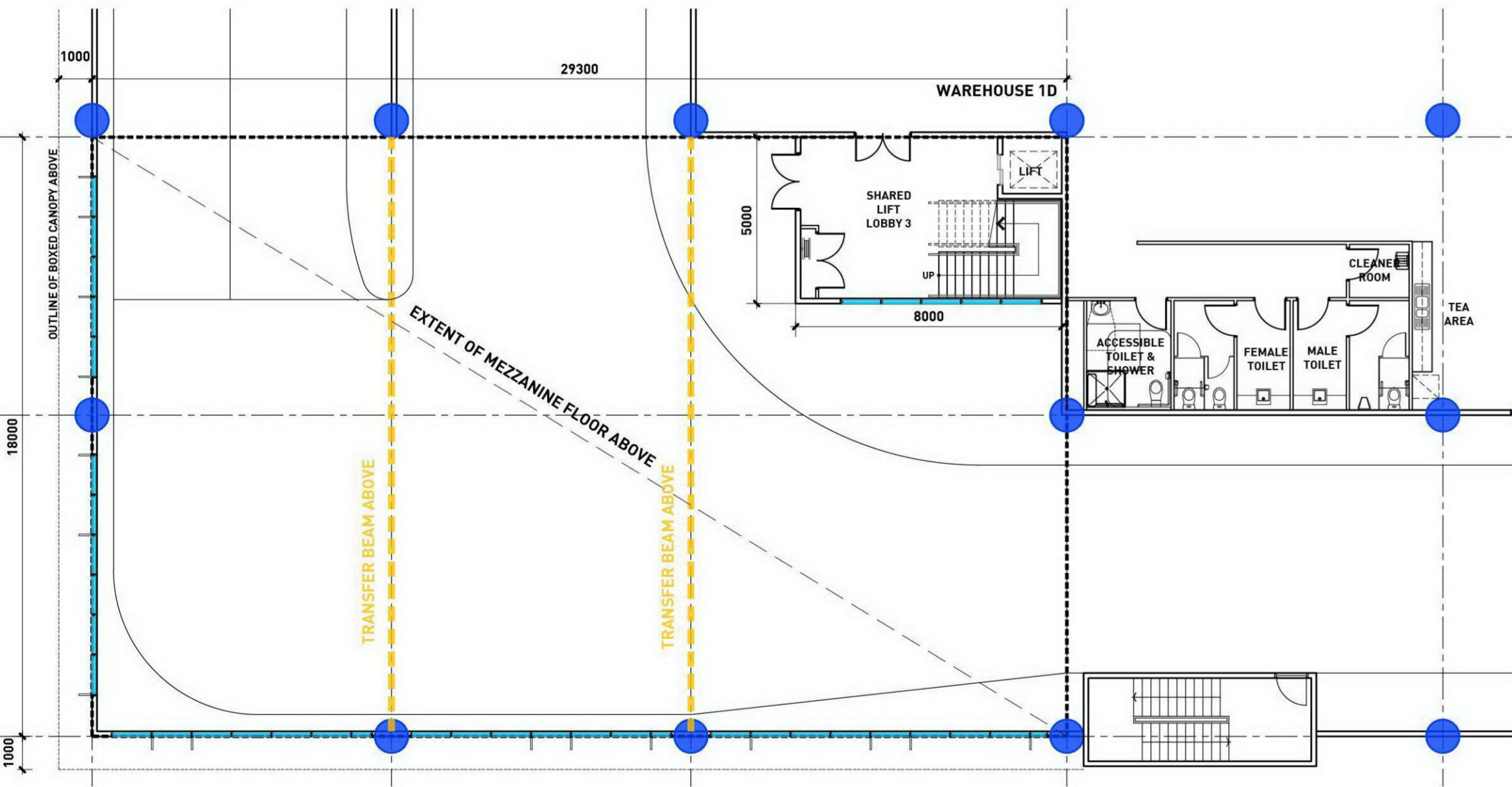
03 OFFICE 1E & 1F - FIRST FLOOR MEZZANINE PLAN



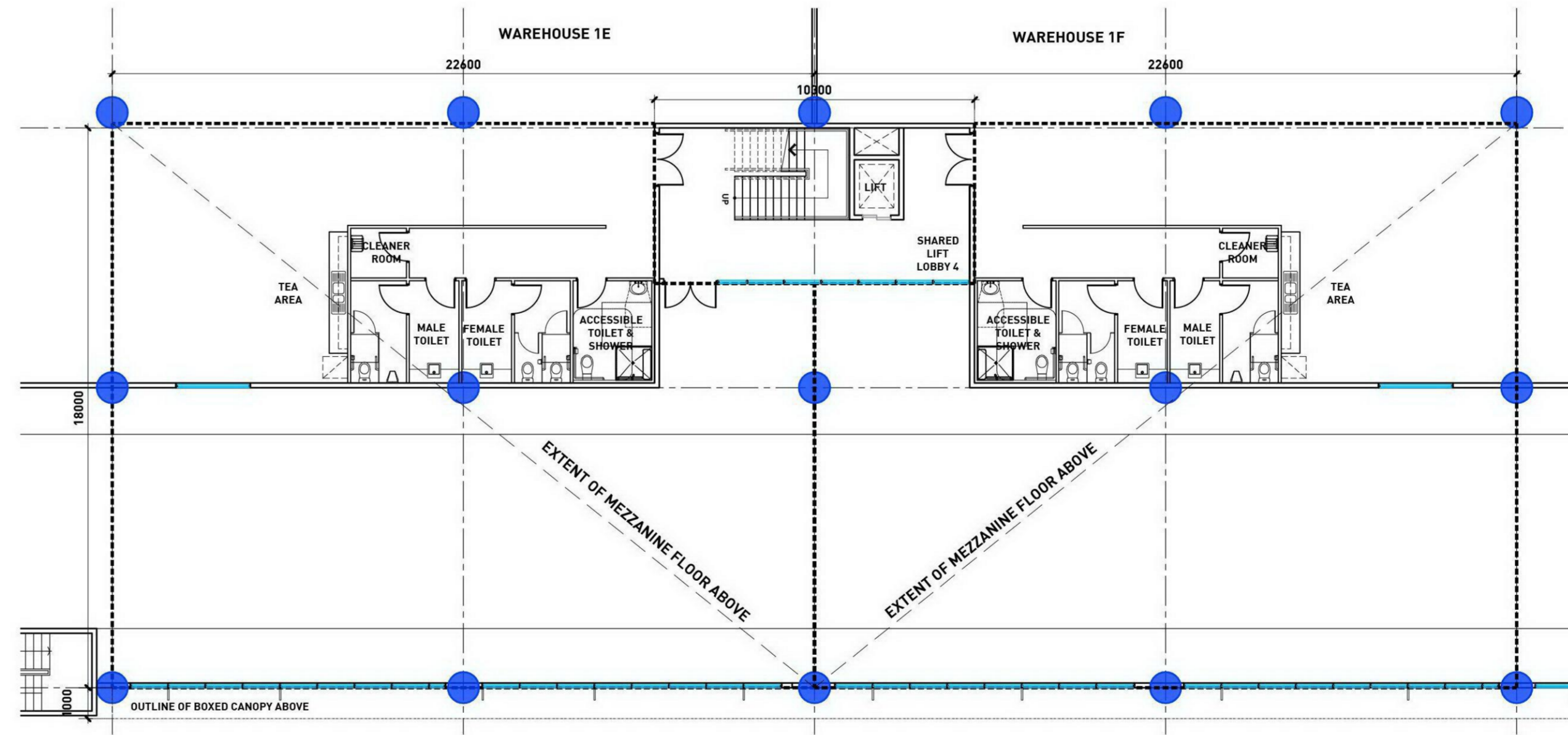
05 DOCK OFFICE 1D FLOOR PLAN  
SCALE: 1:100



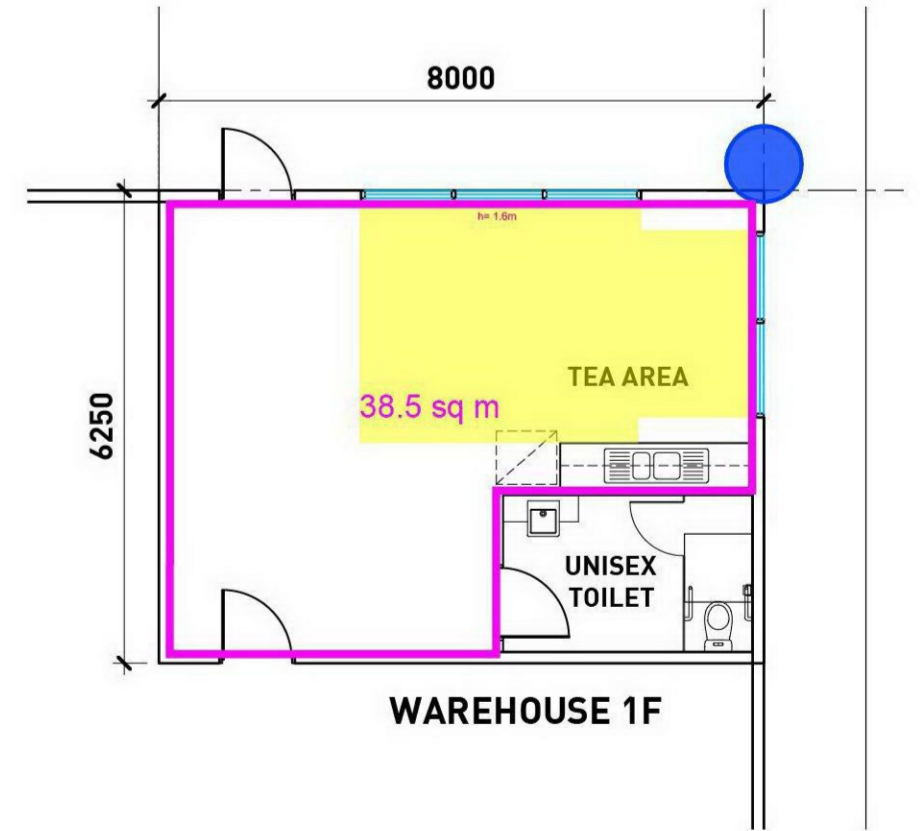
06 DOCK OFFICE 1E FLOOR PLAN  
SCALE: 1:100



02 OFFICE 1D - FIRST FLOOR PLAN



04 OFFICE 1E & 1F - FIRST FLOOR PLAN



07 DOCK OFFICE 1F FLOOR PLAN  
SCALE: 1:100

CLIENT:

**dexus**



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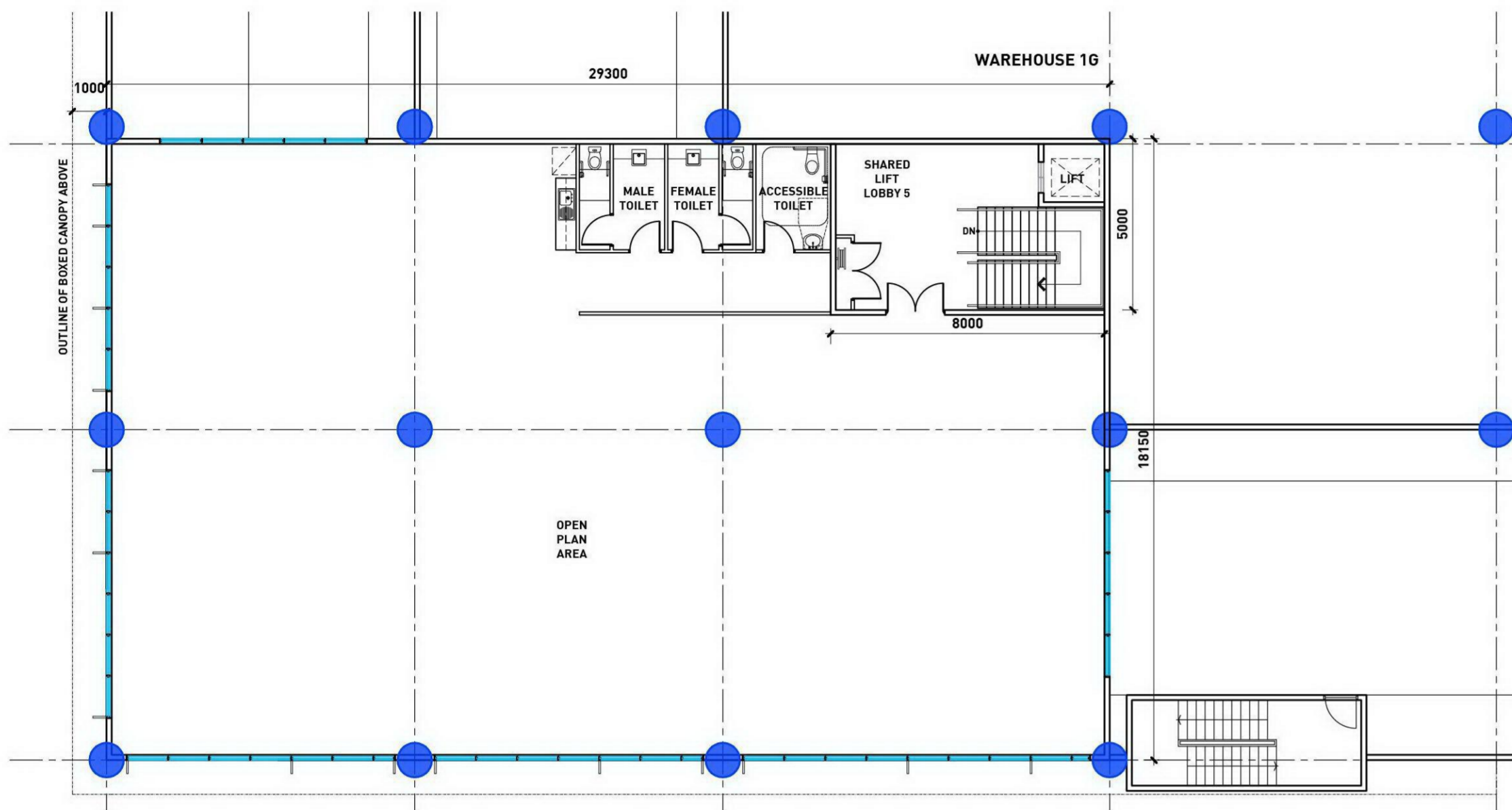
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**LEGEND**

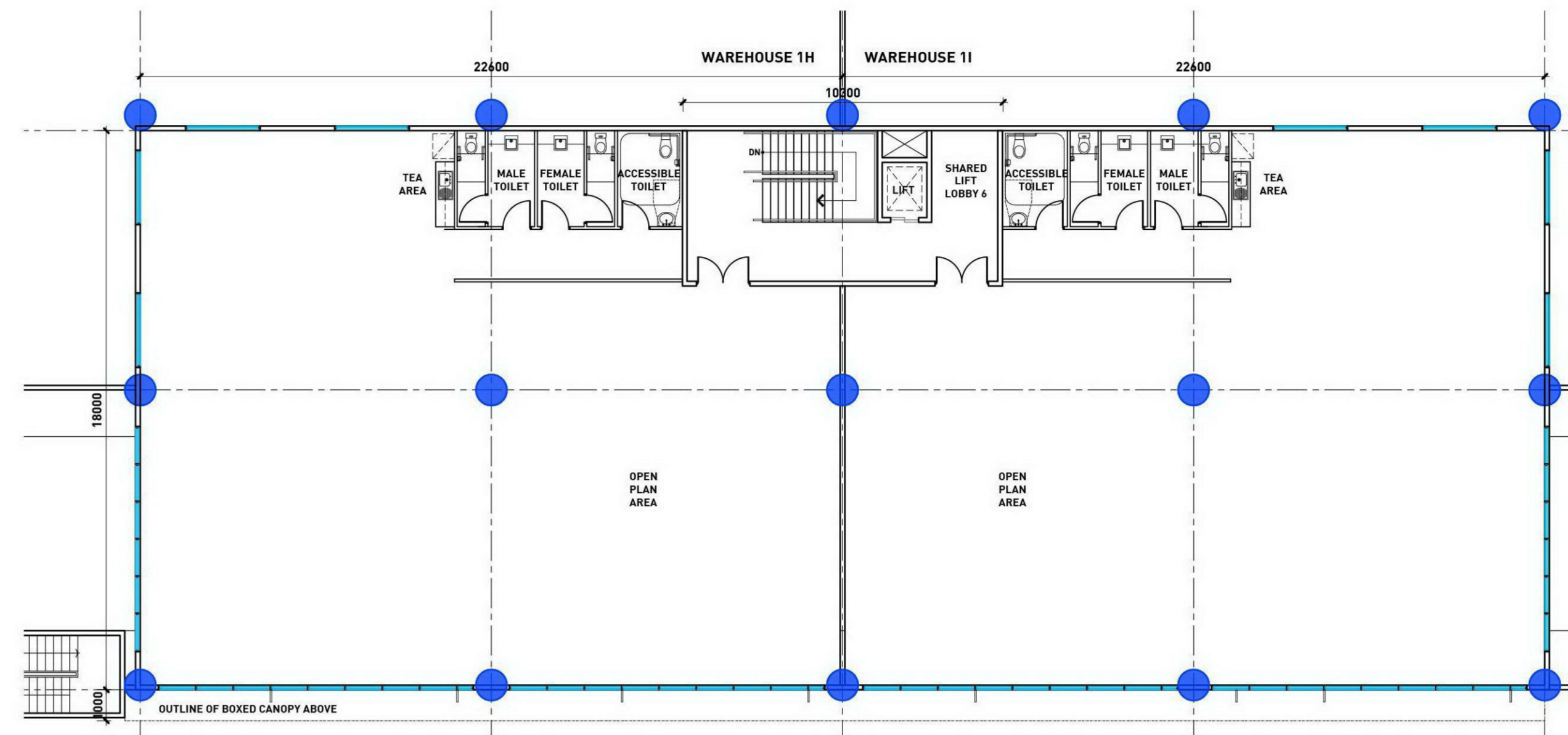
Total Area

Compliant Area

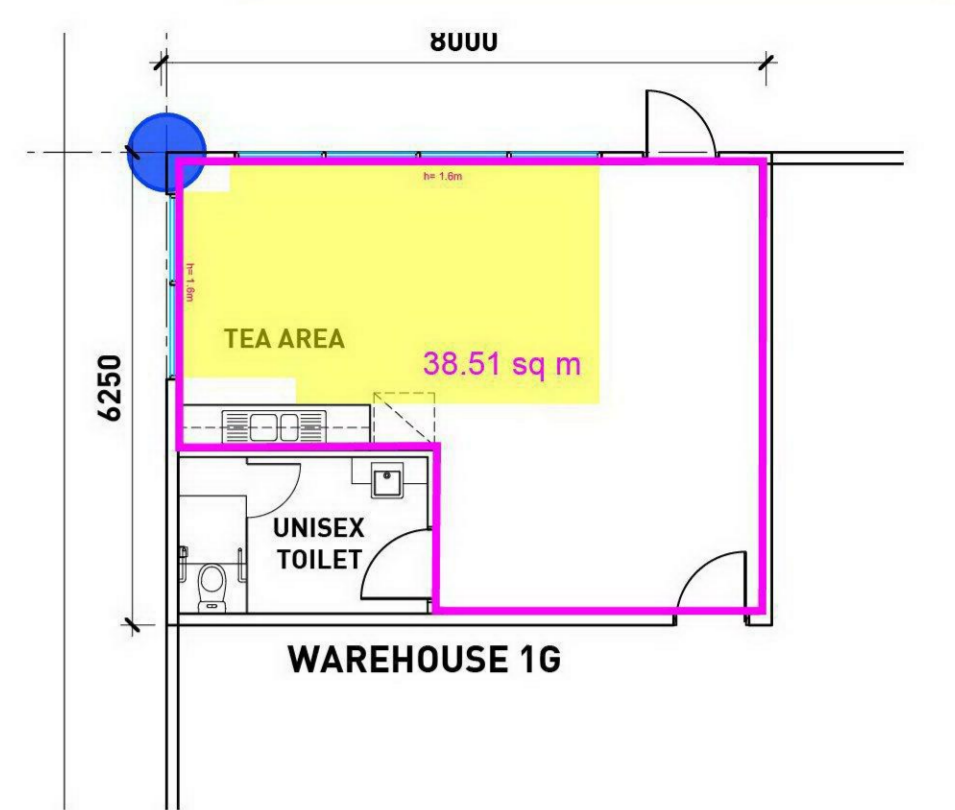
**FOR DEVELOPMENT APPLICATION ONLY**  
SUBJECT TO STATUTORY APPROVAL



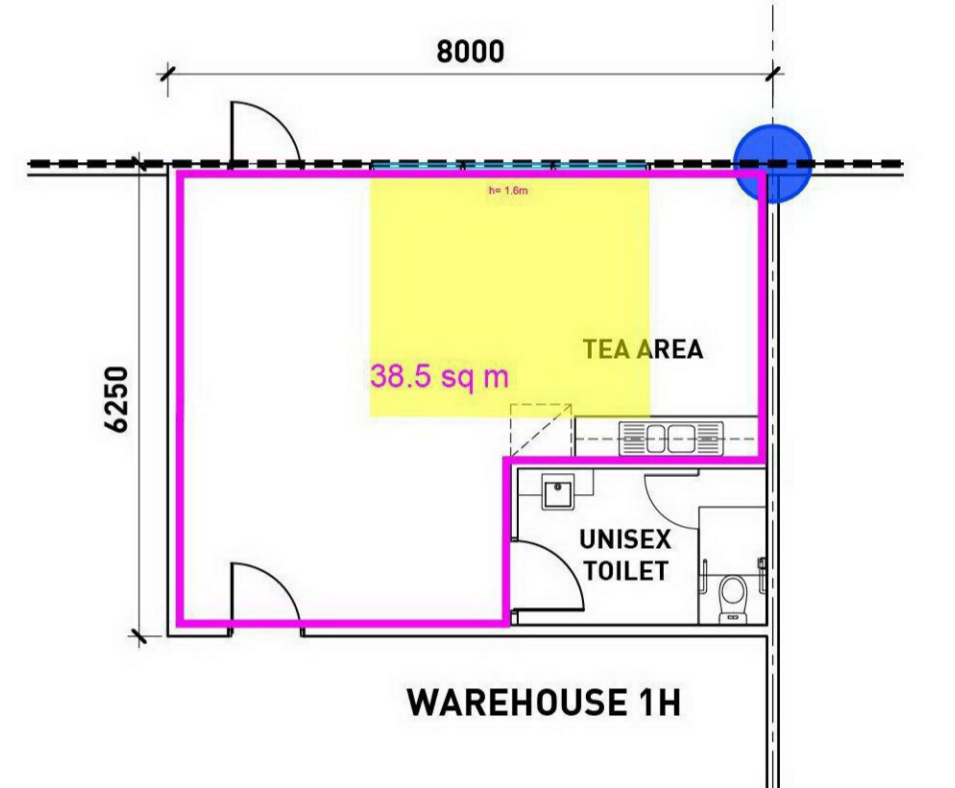
01 OFFICE 1G - SECOND FLOOR MEZZANINE PLAN



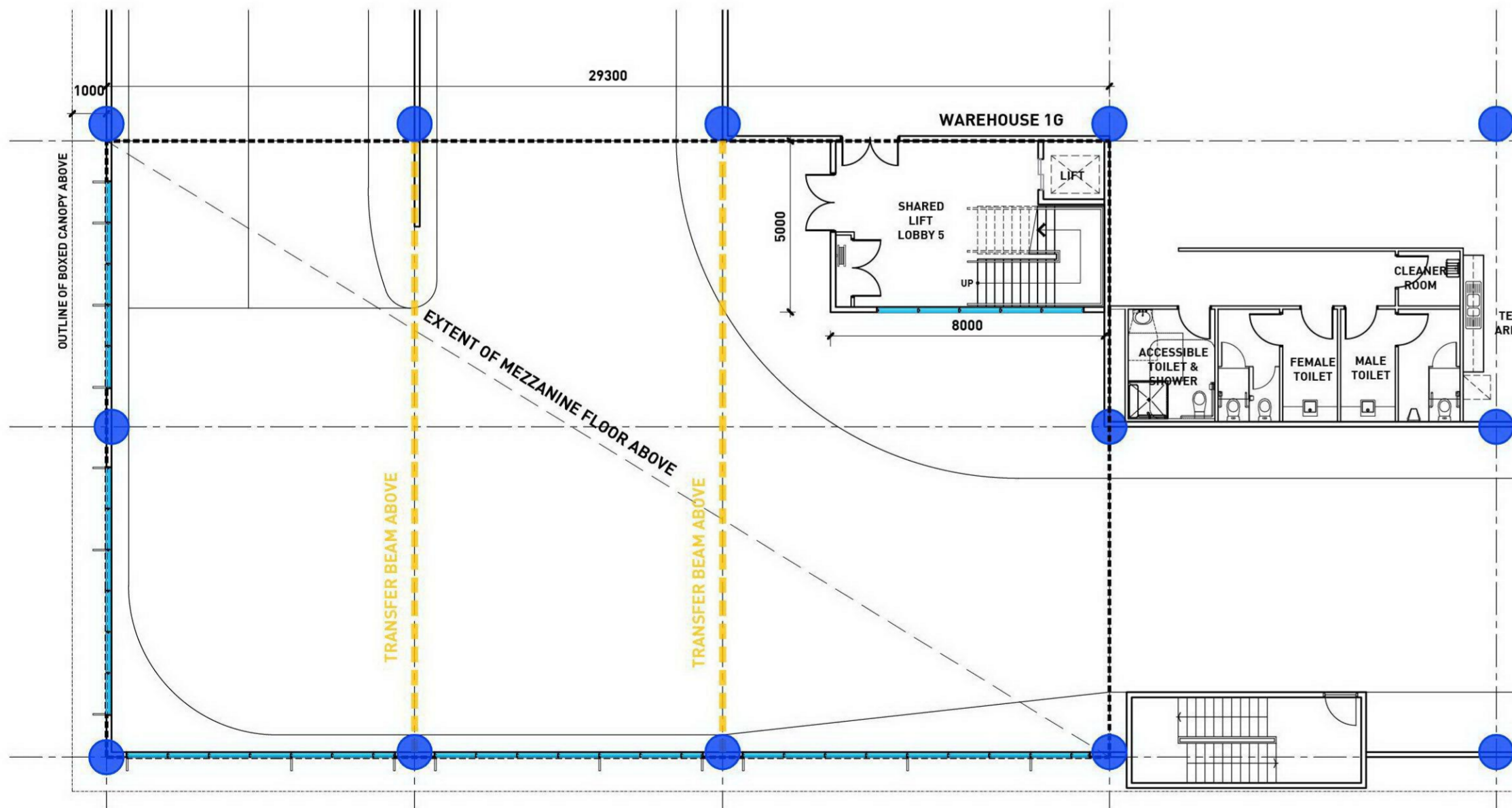
03 OFFICE 1H & 1I - SECOND FLOOR MEZZANINE PLAN



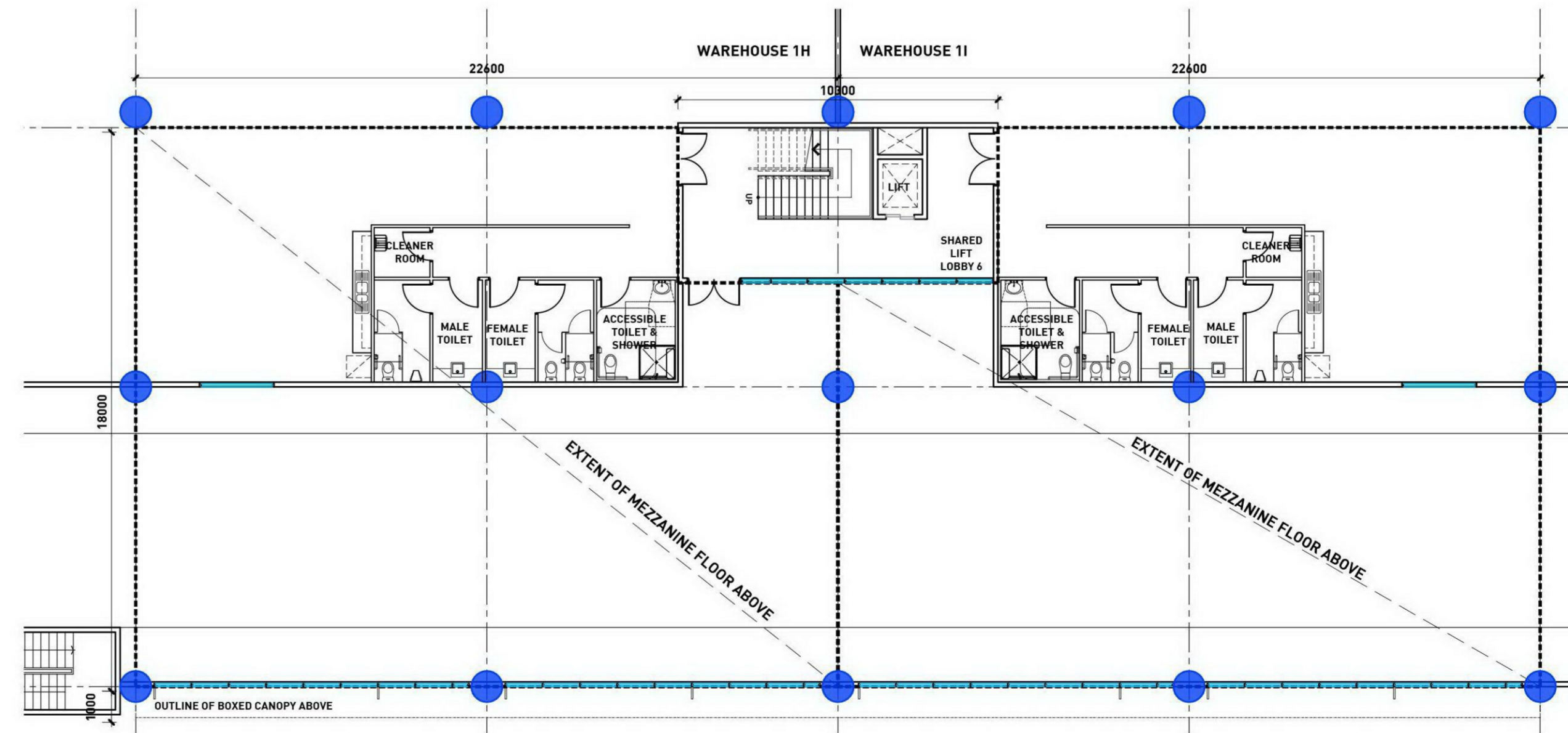
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SCALE: 1:100



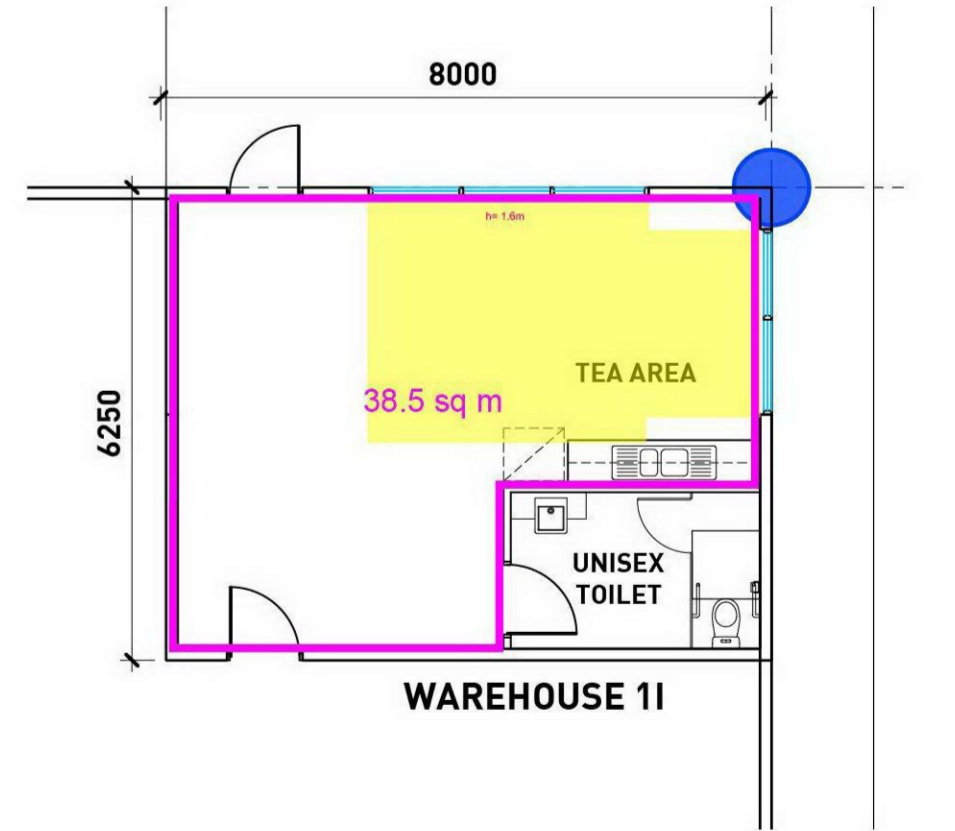
06 DOCK OFFICE 1H FLOOR PLAN  
SCALE: 1:100



02 OFFICE 1G - SECOND FLOOR PLAN



04 OFFICE 1H & 1I - SECOND FLOOR PLAN



07 DOCK OFFICE 1I FLOOR PLAN  
SCALE: 1:100

CLIENT:

**dexus**

**NOTE:**

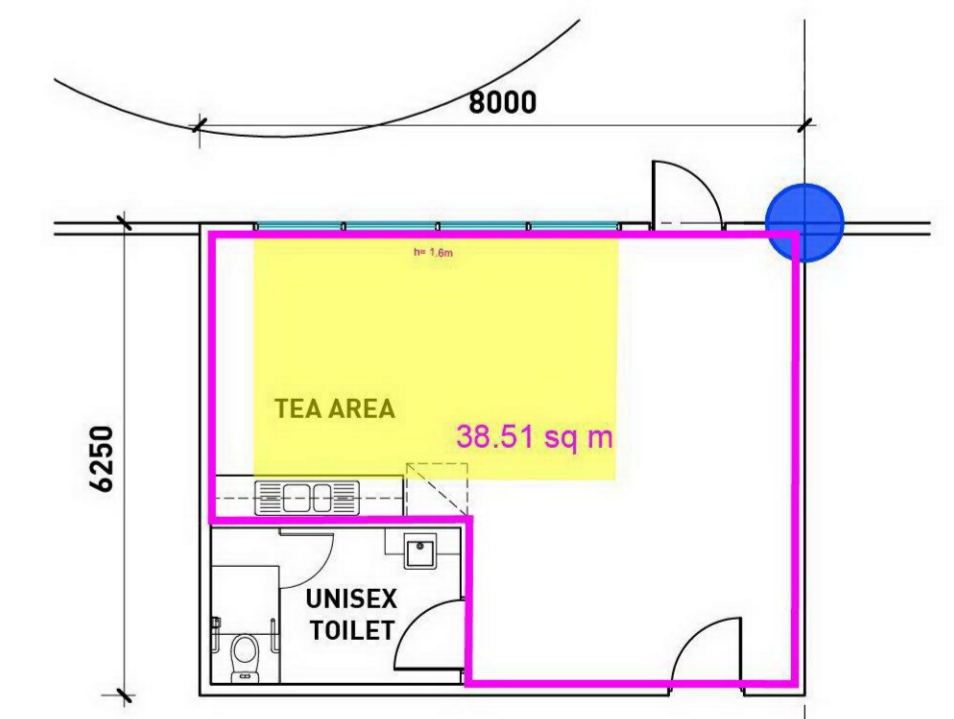
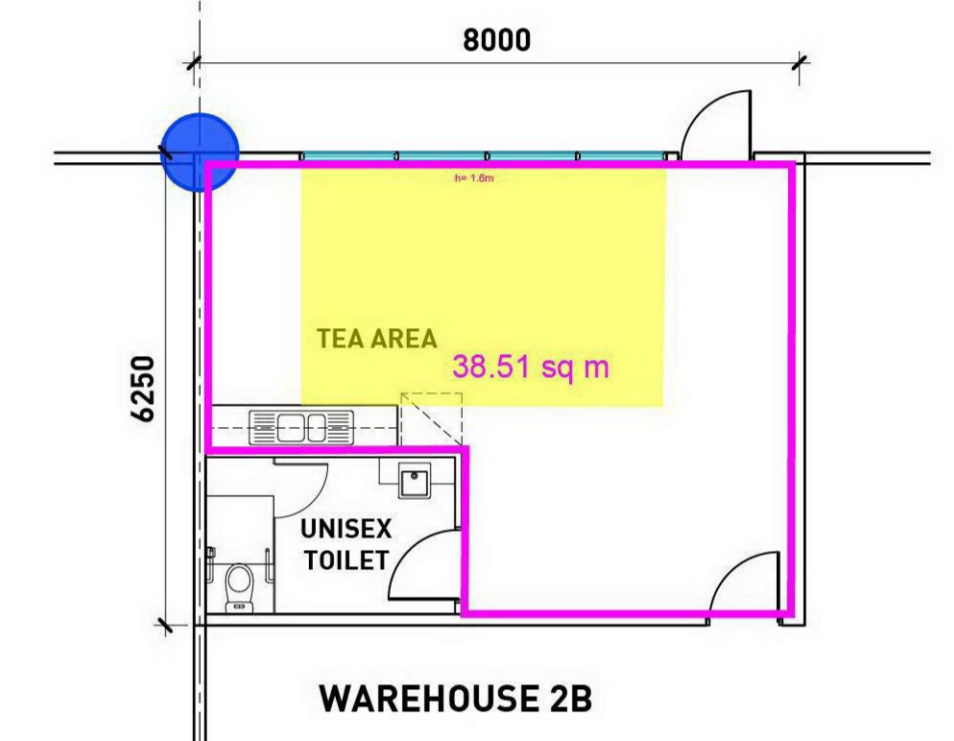
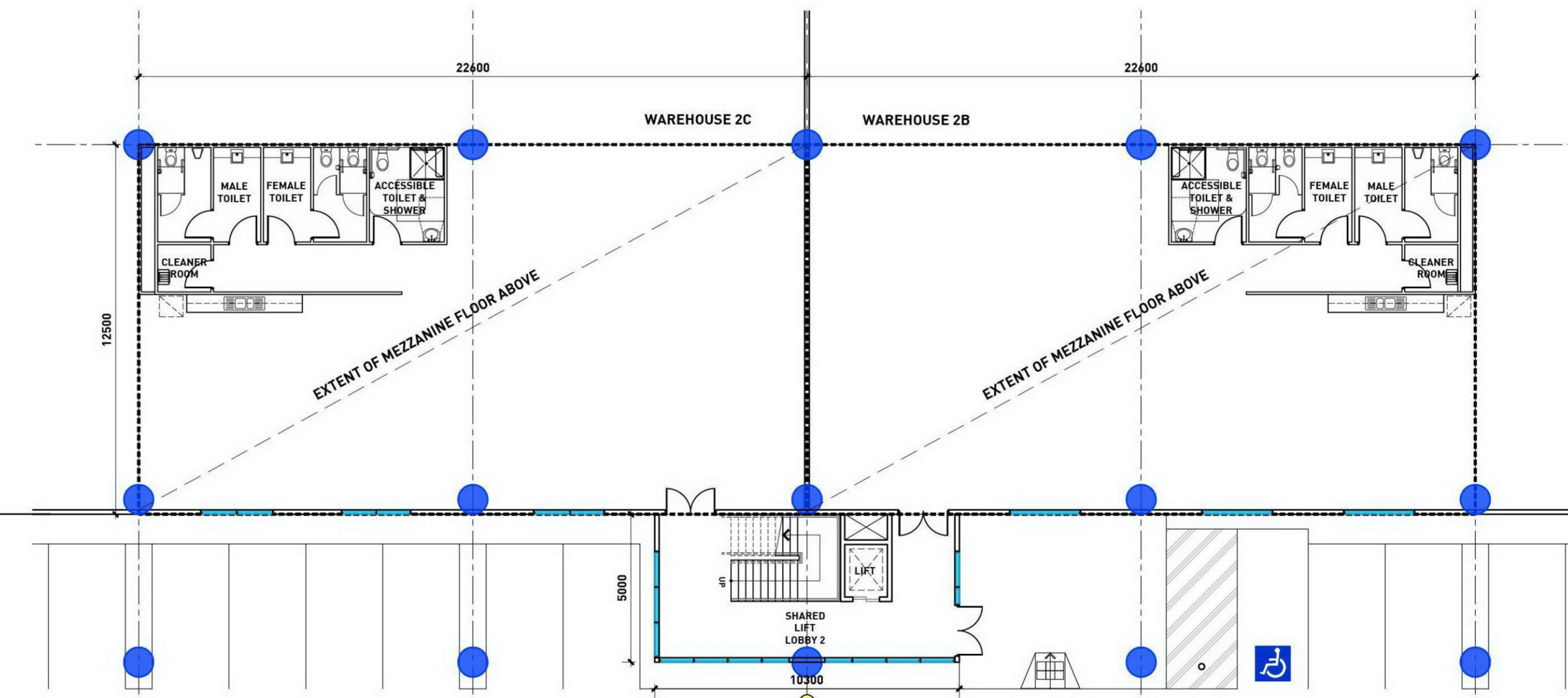
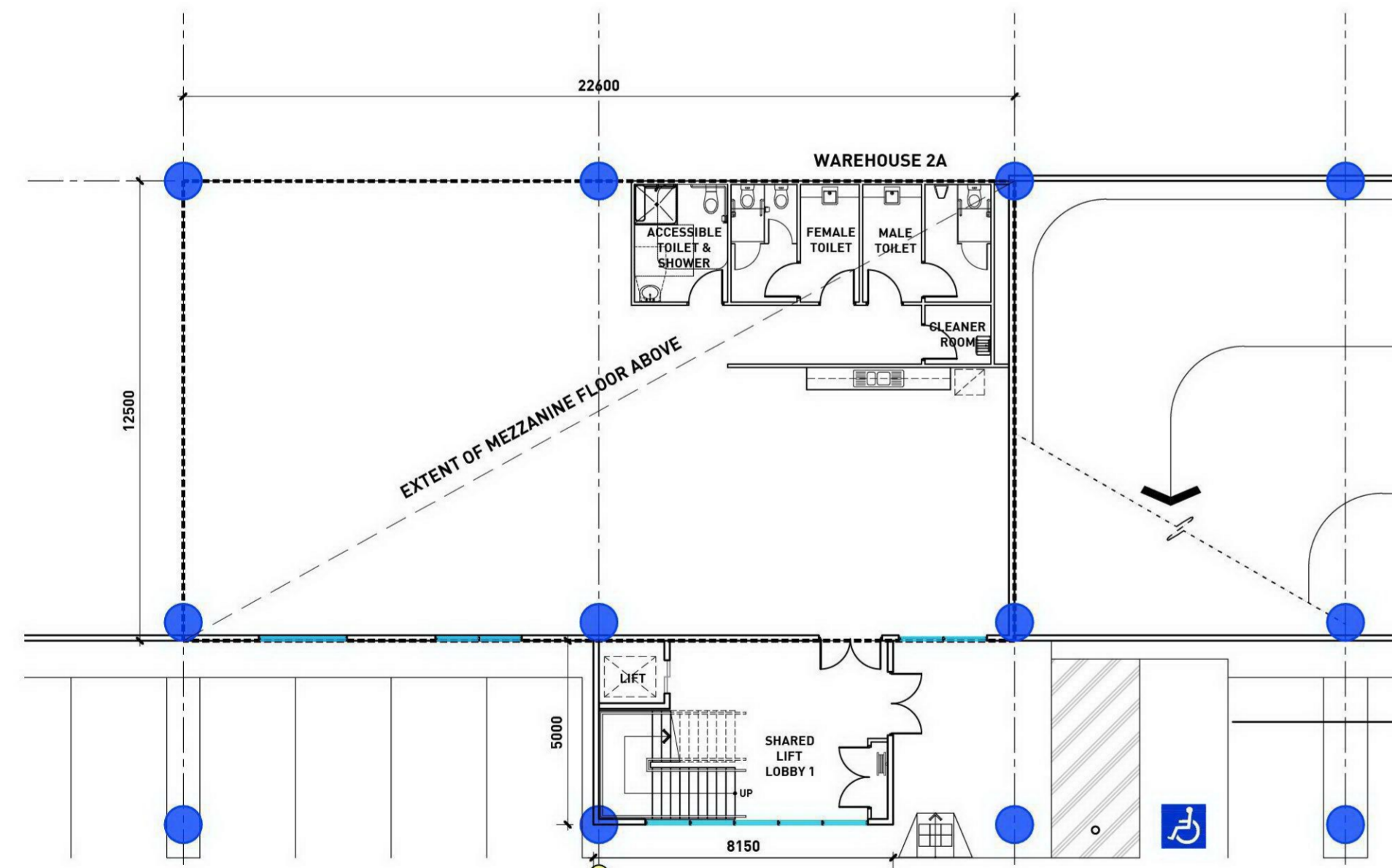
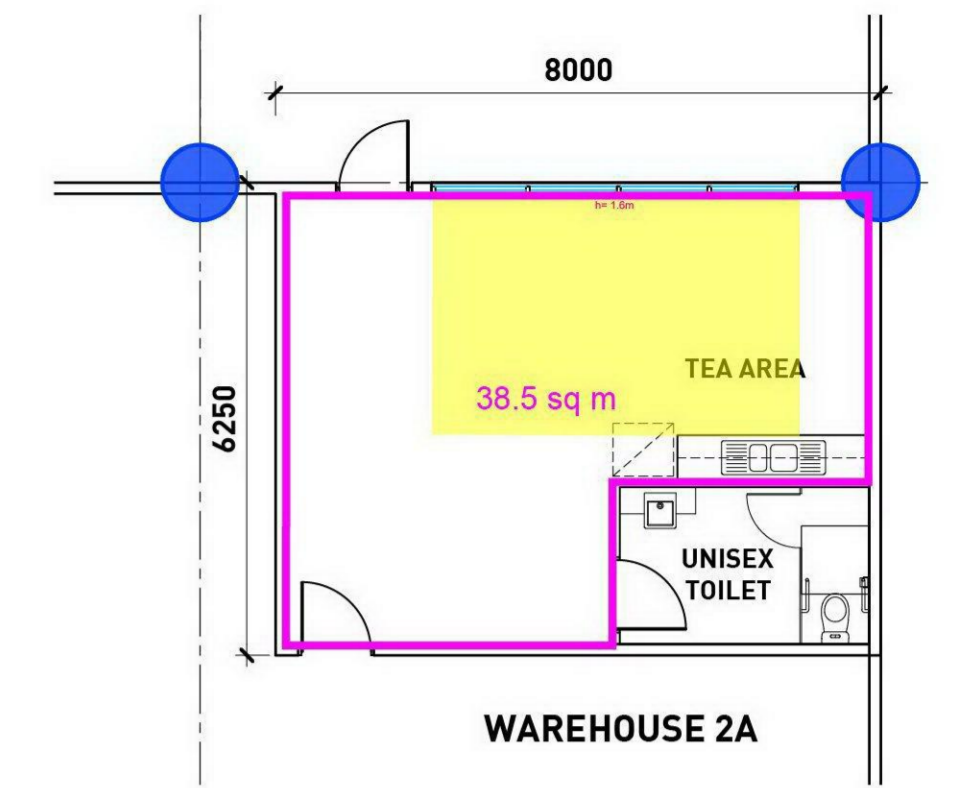
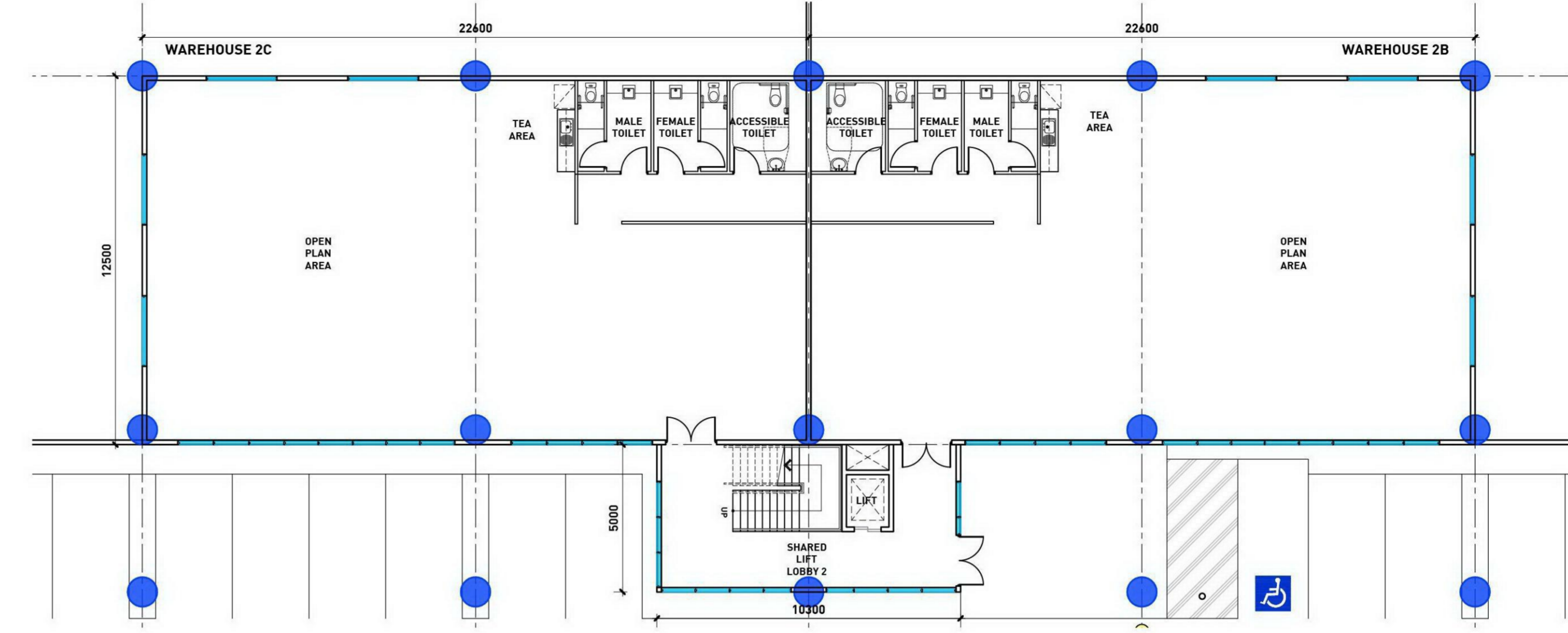
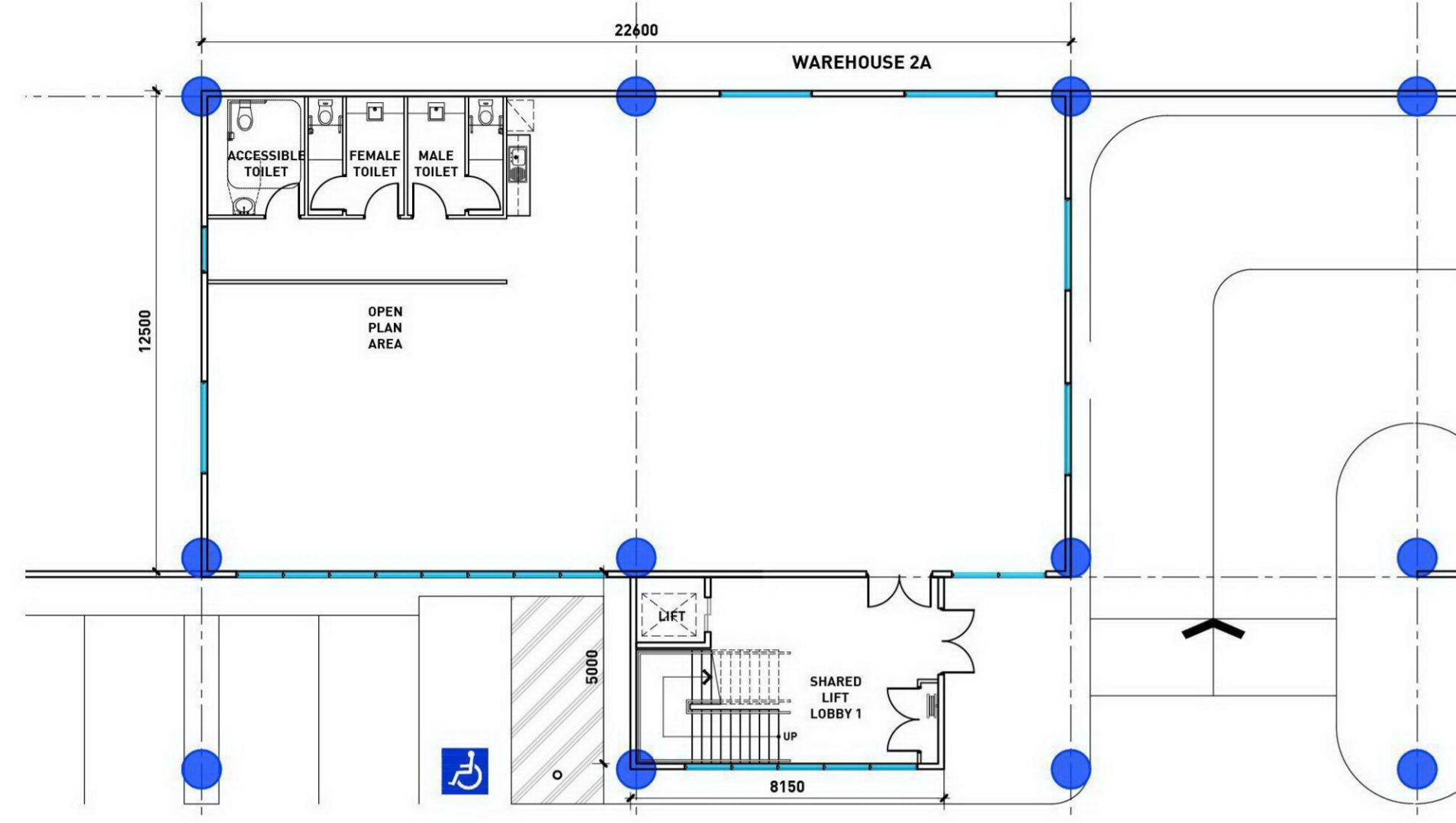
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**LEGEND**

Total Area

Compliant Area

**FOR DEVELOPMENT APPLICATION ONLY**  
SUBJECT TO STATUTORY APPROVAL



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**PROPOSED DEVELOPMENT**

Axxess Corporate Park, 1-31 Gilby Road, Mount Waverley VIC

**OFFICE PLANS**  
**OFFICE 2A, 2B, & 2C**

DRAWING TYPE:  
DEVELOPMENT APPLICATION

DRAWING NUMBER:  
2209-122-DA-113

REVISION:  
A

DATE: 9.12.2022  
SCALE: 1:150 @ A1 / 1:300 @ A3

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SCALE BAR @ A1

**NOTE:**

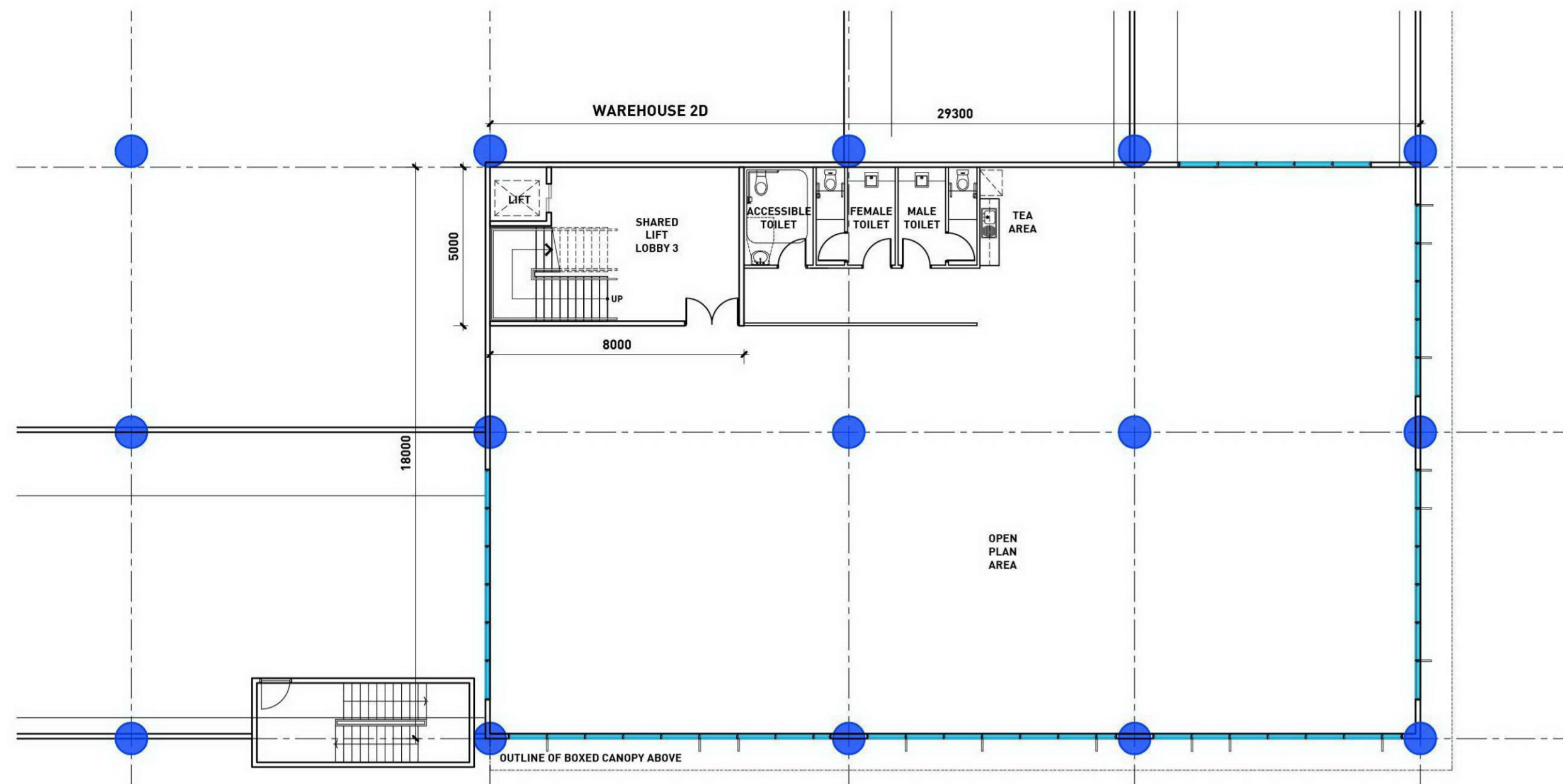
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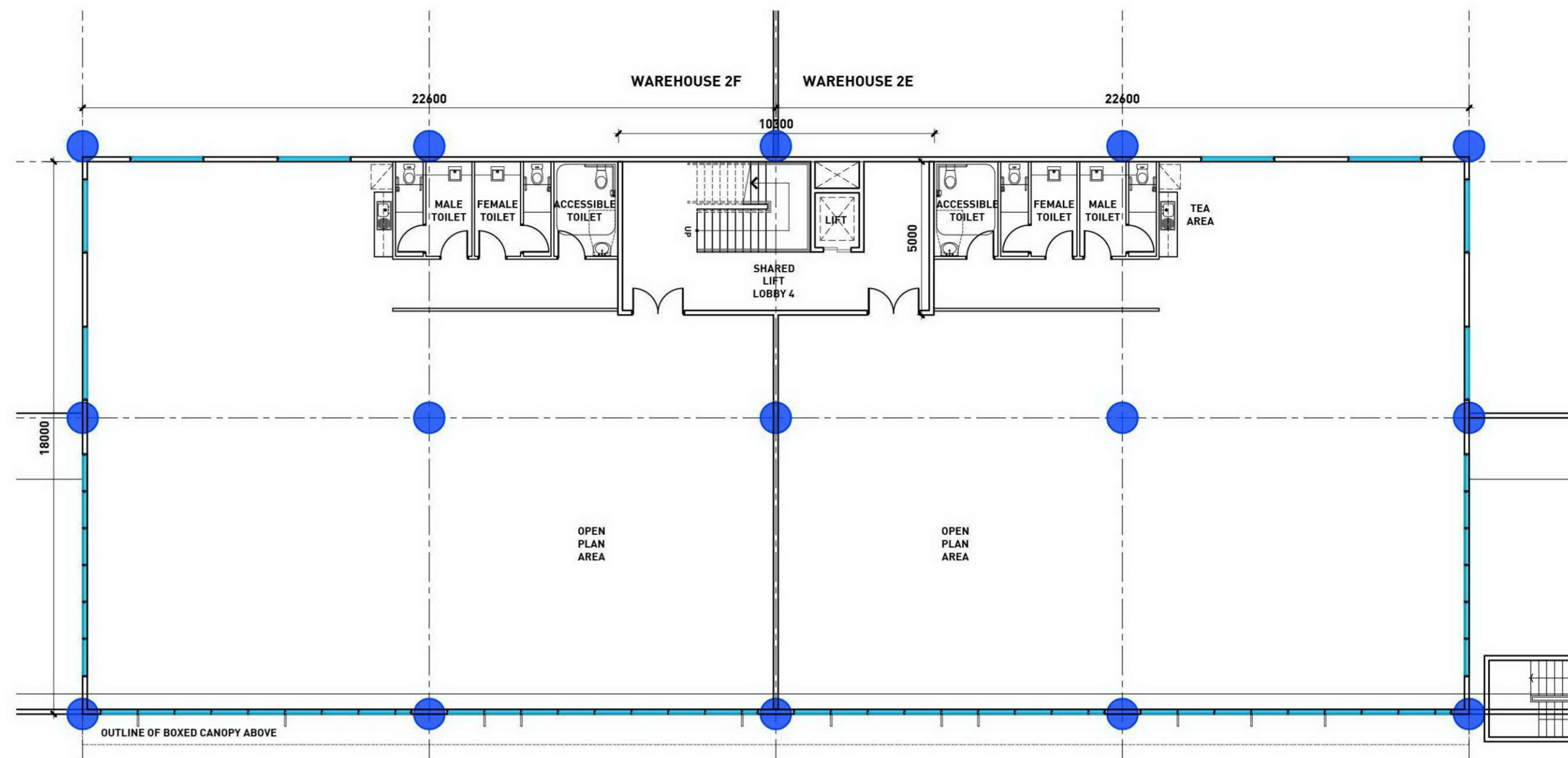
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Compliant Area 

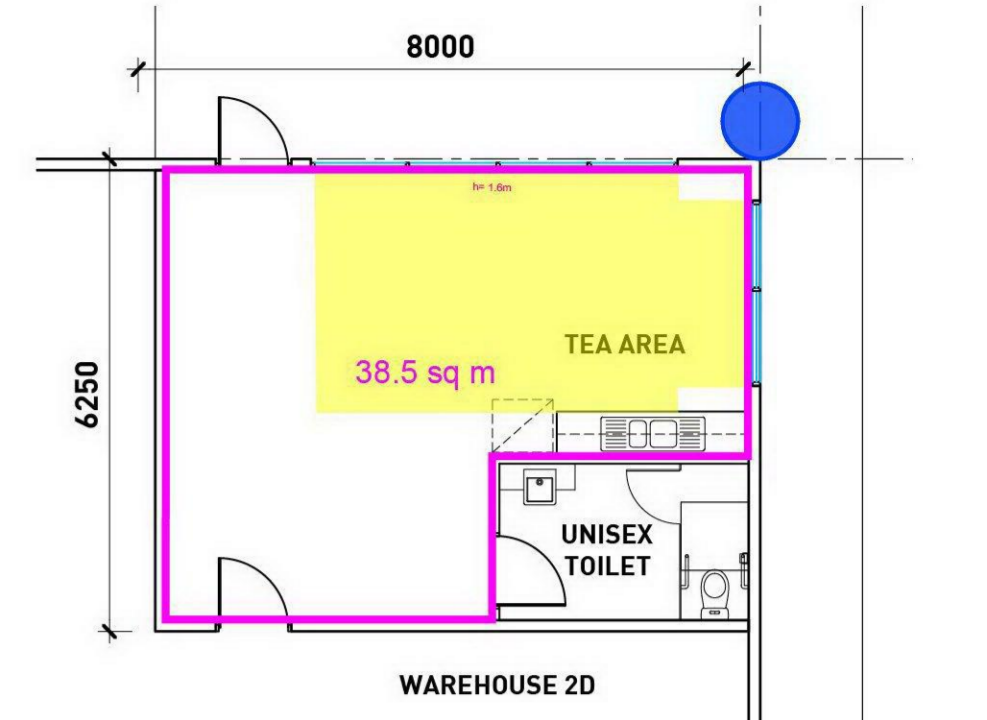
**FOR DEVELOPMENT APPLICATION ONLY**  
SUBJECT TO STATUTORY APPROVAL



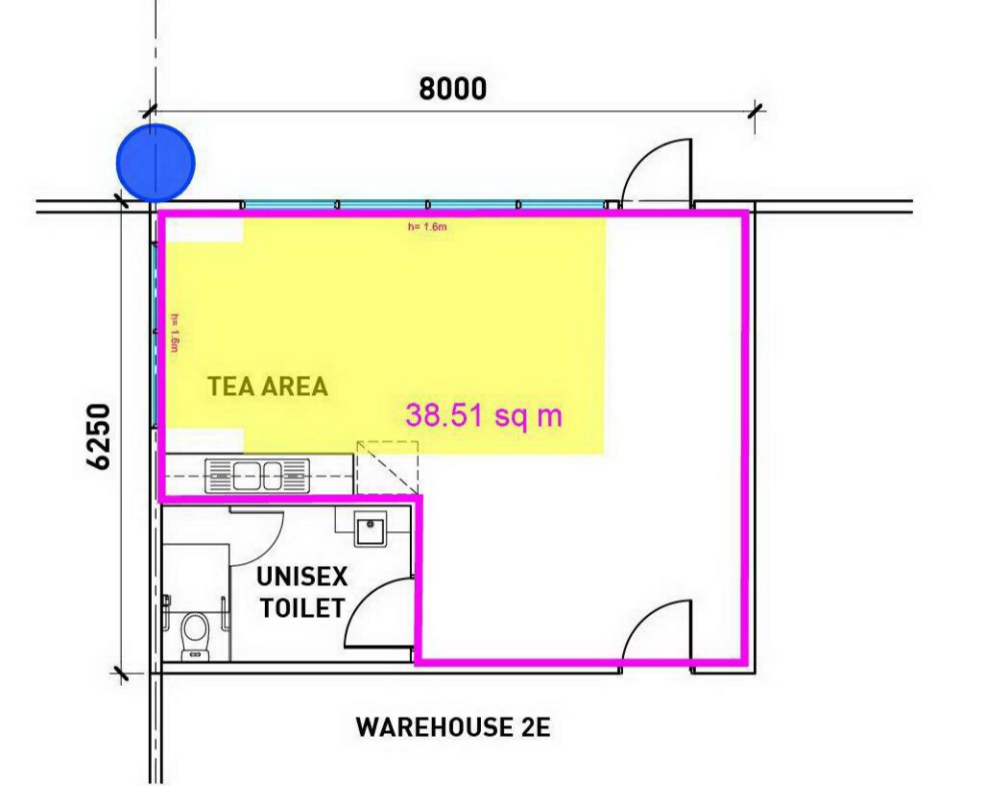
**01 OFFICE 2D - FIRST FLOOR MEZZANINE PLAN**



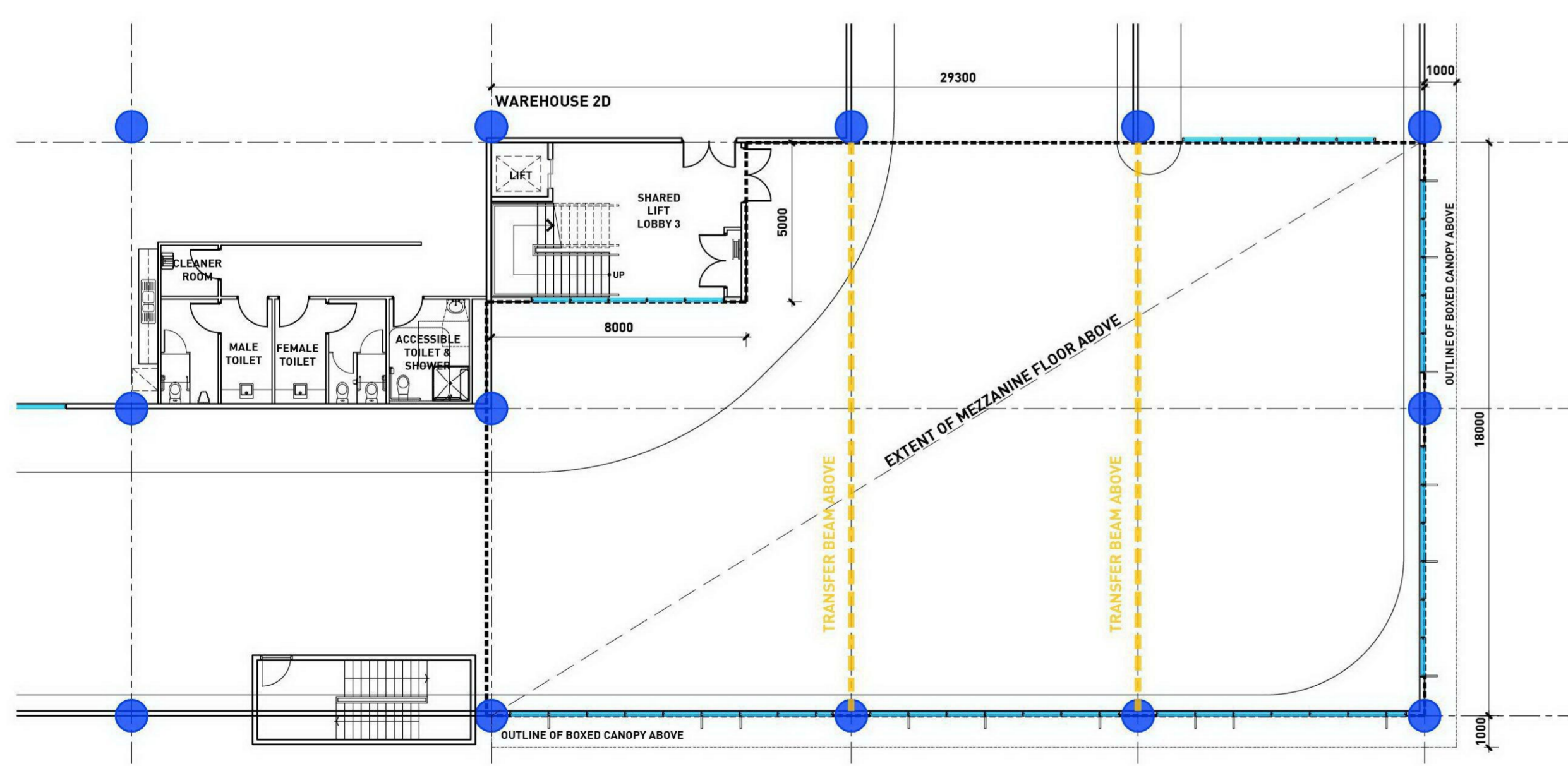
**03 OFFICE 2F & 2E - FIRST FLOOR MEZZANINE PLAN**



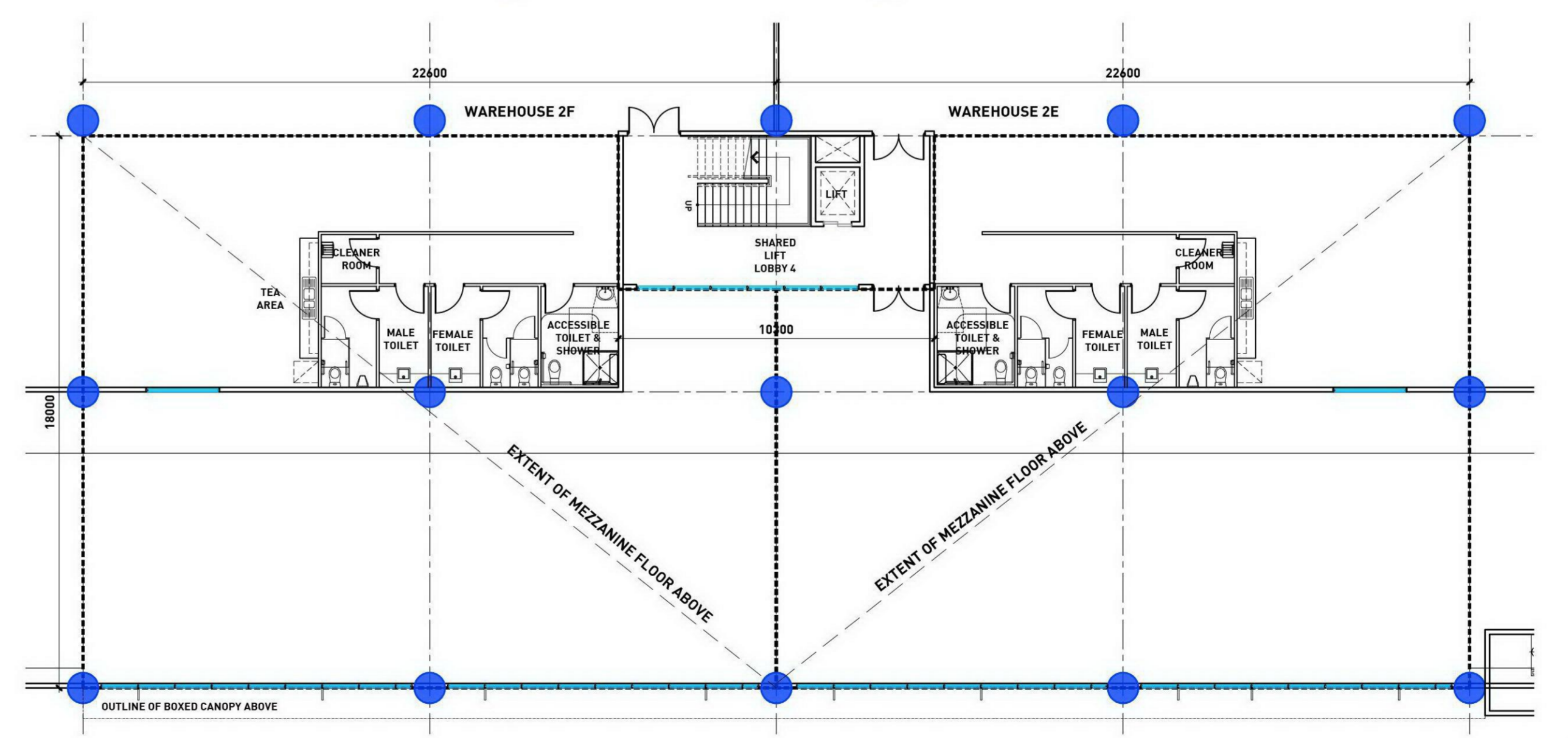
**05 DOCK OFFICE 2D FLOOR PLAN**  
SCALE: 1:100



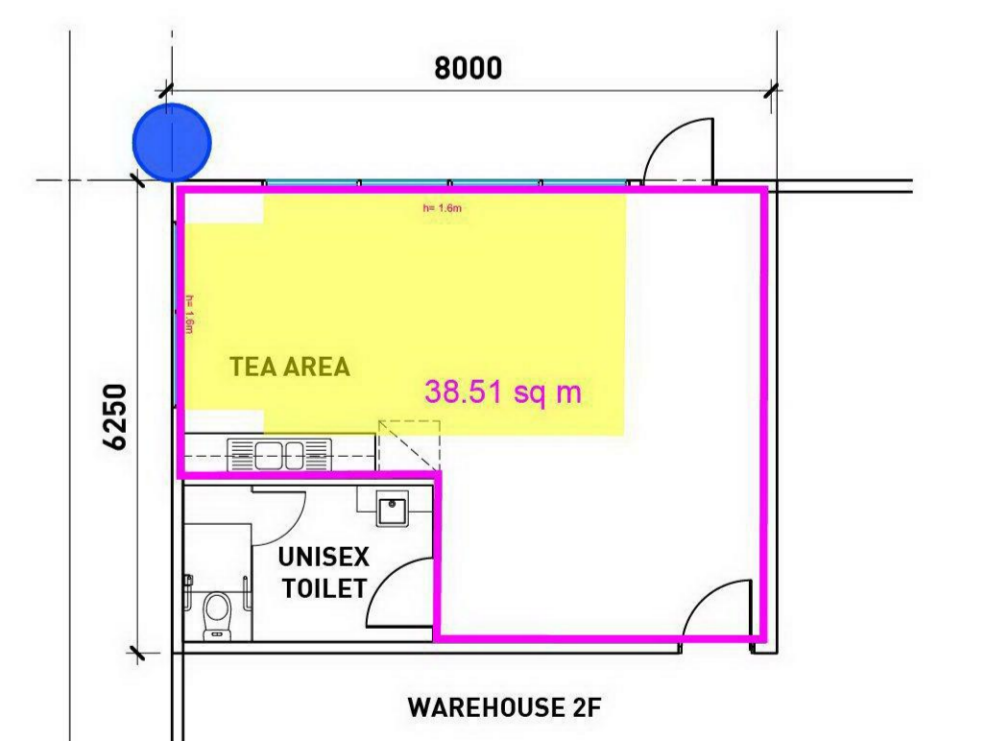
**06 DOCK OFFICE 2E FLOOR PLAN**  
SCALE: 1:100



**02 OFFICE 2D - FIRST FLOOR PLAN**



**04 OFFICE 2F & 2E - FIRST FLOOR PLAN**



**07 DOCK OFFICE 2F FLOOR PLAN**  
SCALE: 1:100

CLIENT:

**dexus**

**NOTE:**

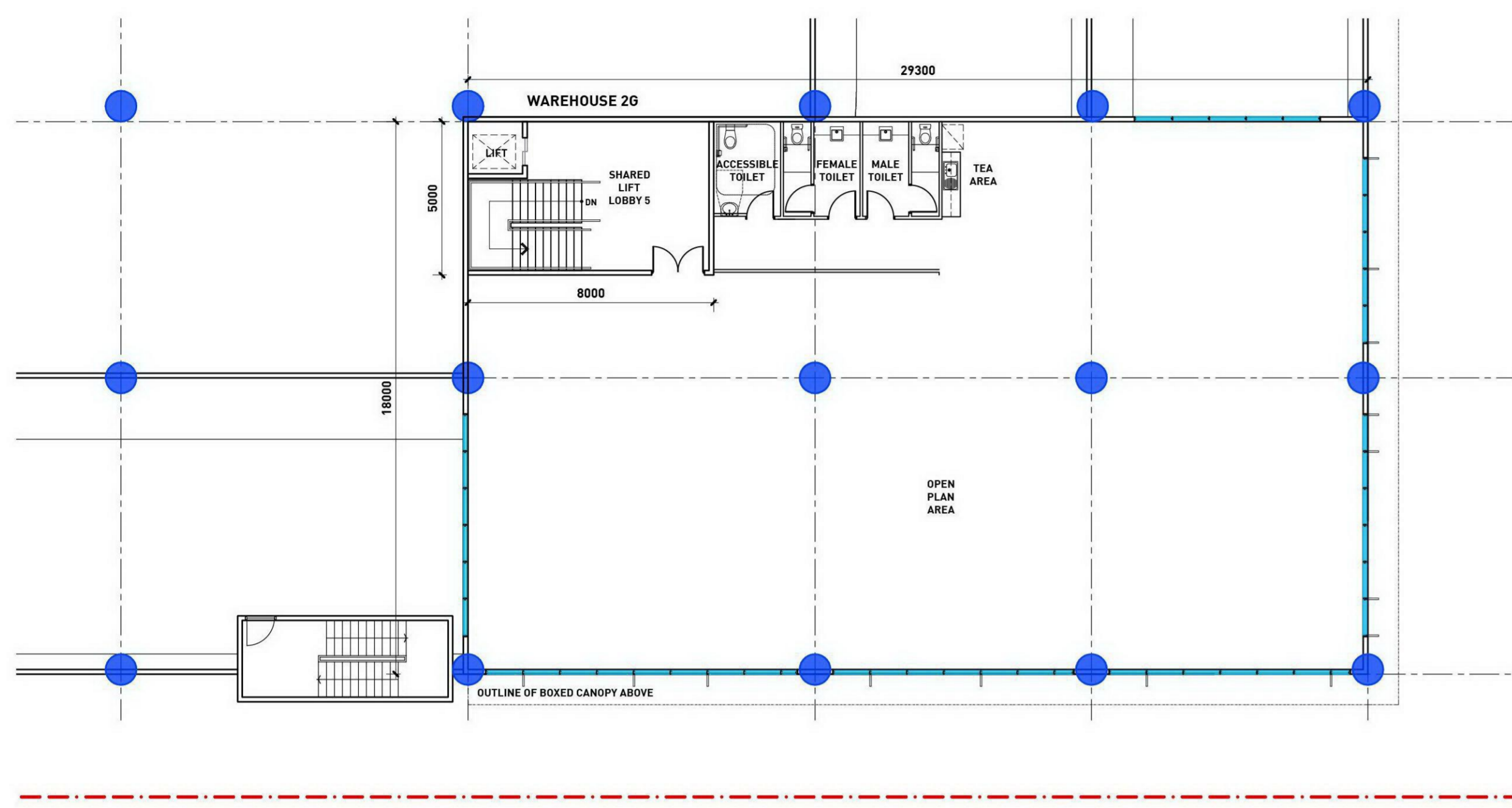
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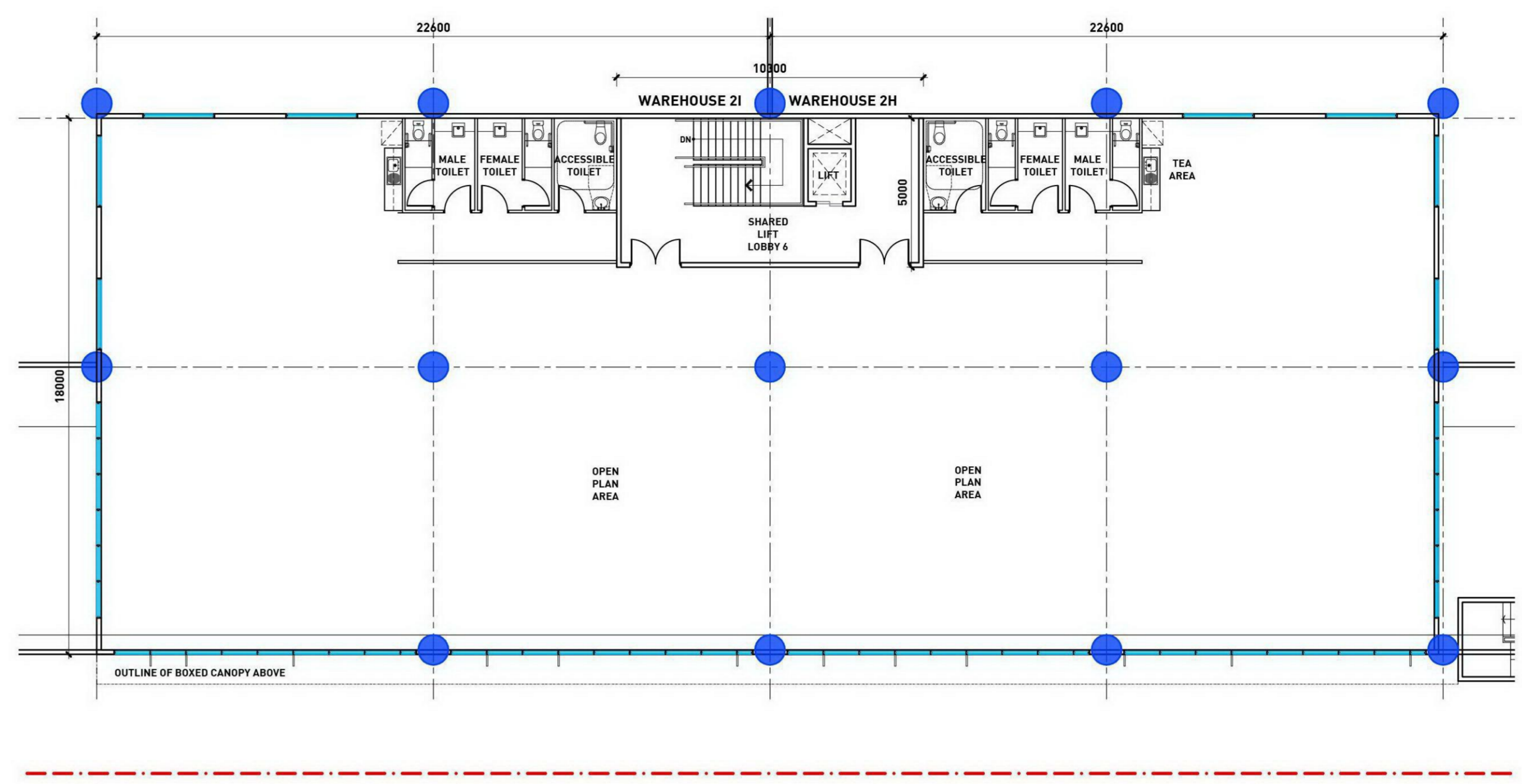
Total Area

Compliant Area

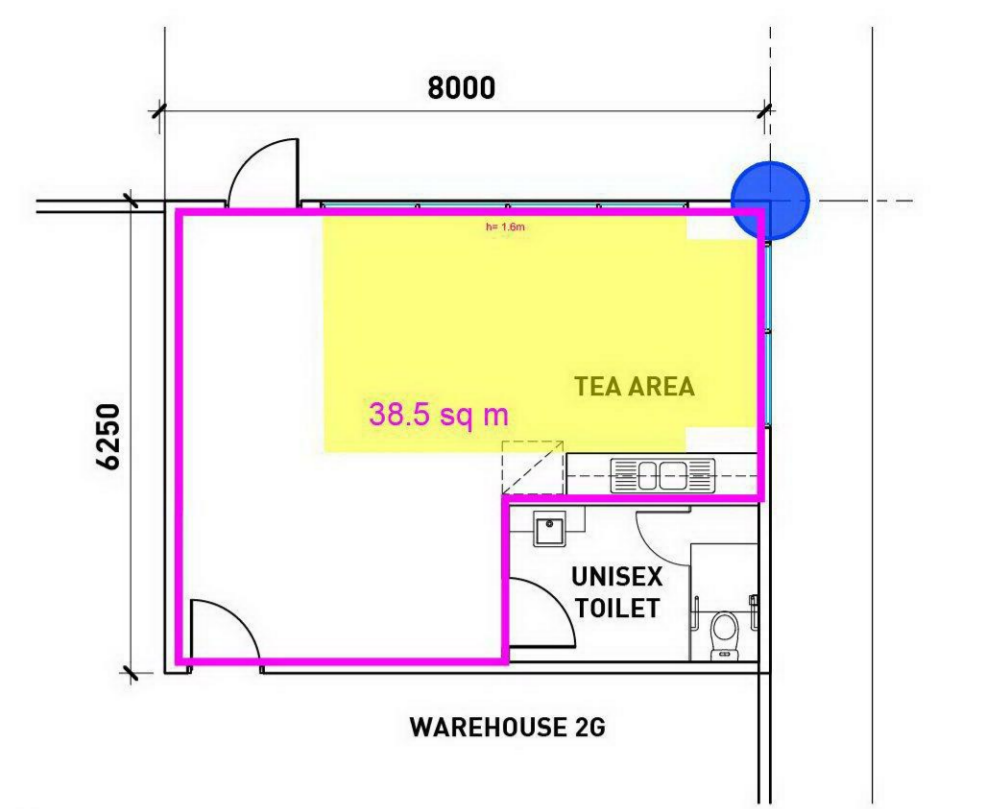
**FOR DEVELOPMENT APPLICATION ONLY**  
SUBJECT TO STATUTORY APPROVAL



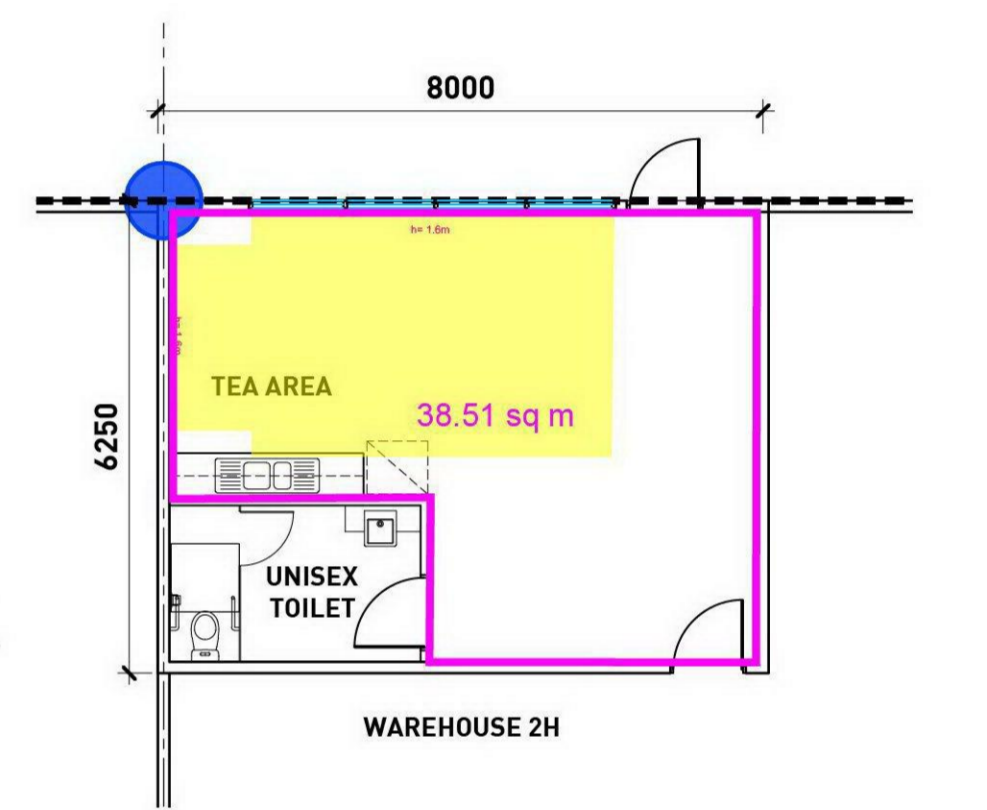
01 OFFICE 2G - SECOND FLOOR MEZZANINE PLAN



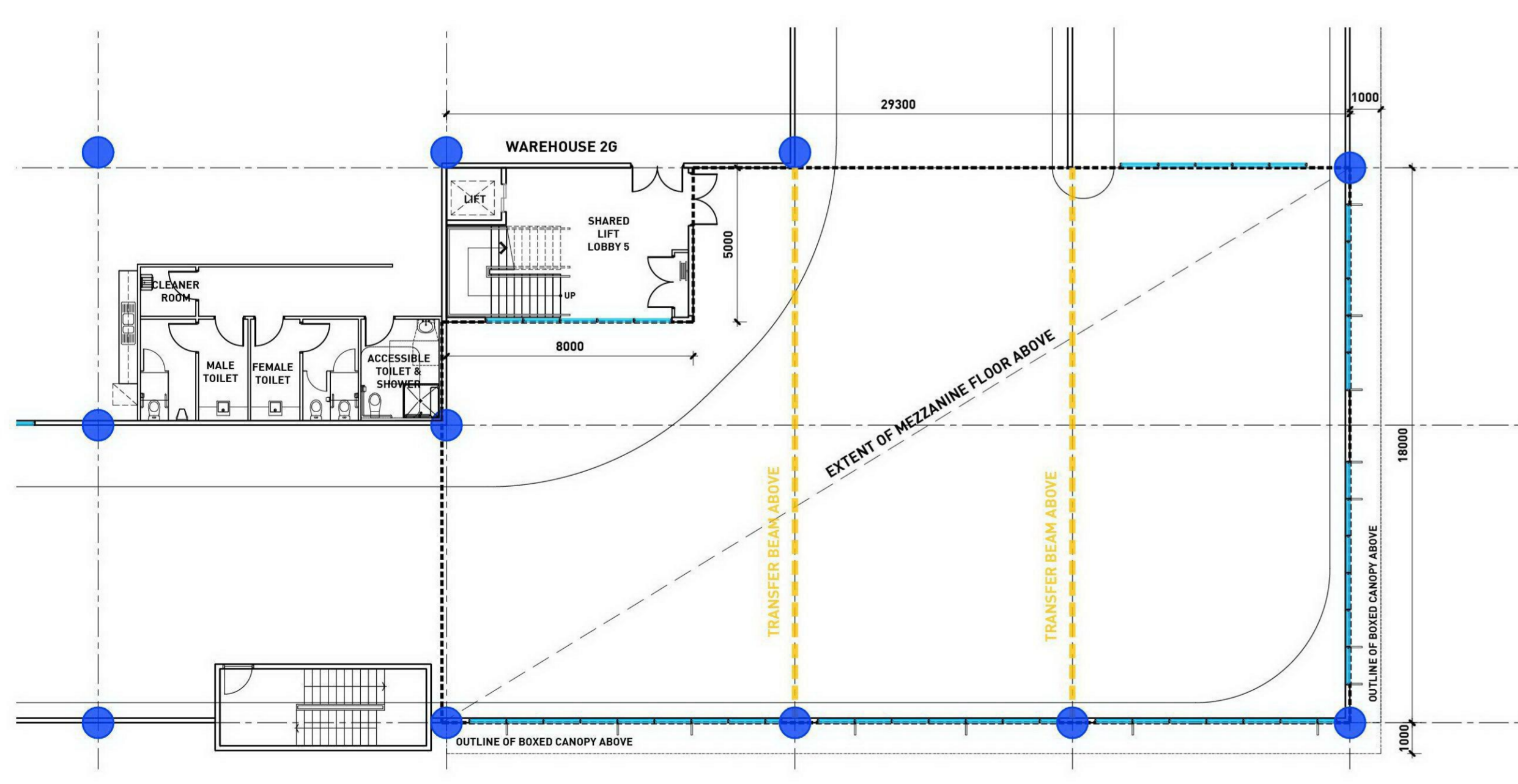
03 OFFICE 2H & 2I - SECOND FLOOR MEZZANINE PLAN



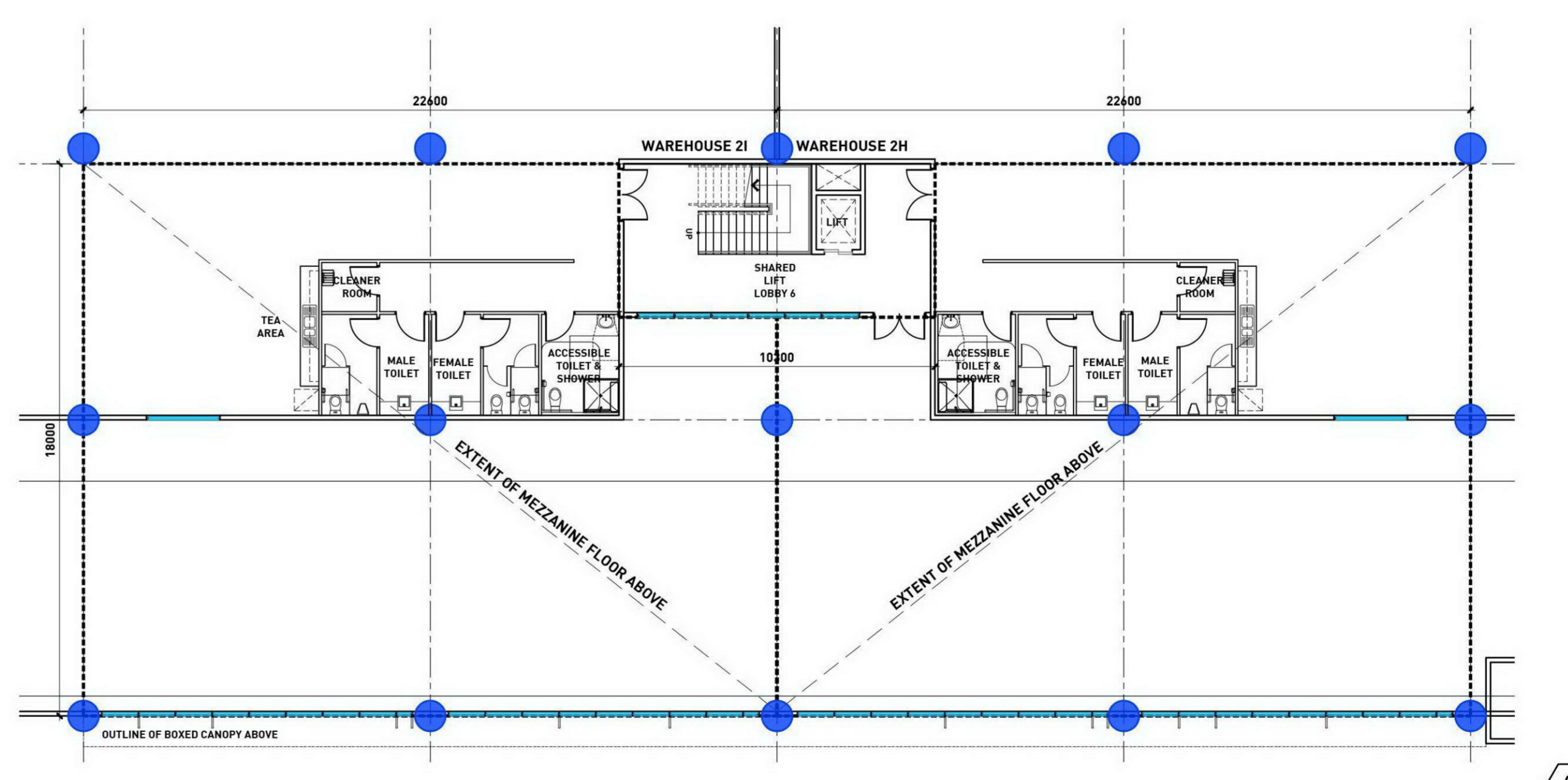
05 DOCK OFFICE 2G FLOOR PLAN  
SCALE: 1:100



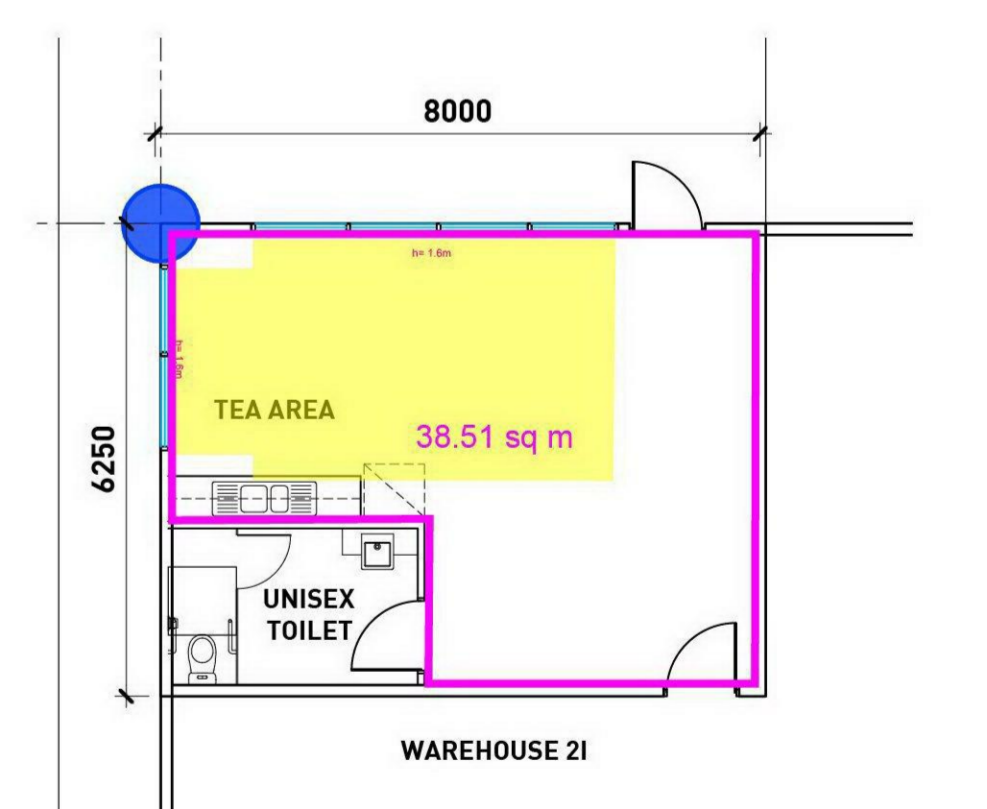
06 DOCK OFFICE 2H FLOOR PLAN  
SCALE: 1:100



02 OFFICE 2G - SECOND FLOOR PLAN



04 OFFICE 2H & 2I - SECOND FLOOR PLAN



07 DOCK OFFICE 2I FLOOR PLAN  
SCALE: 1:100

CLIENT:





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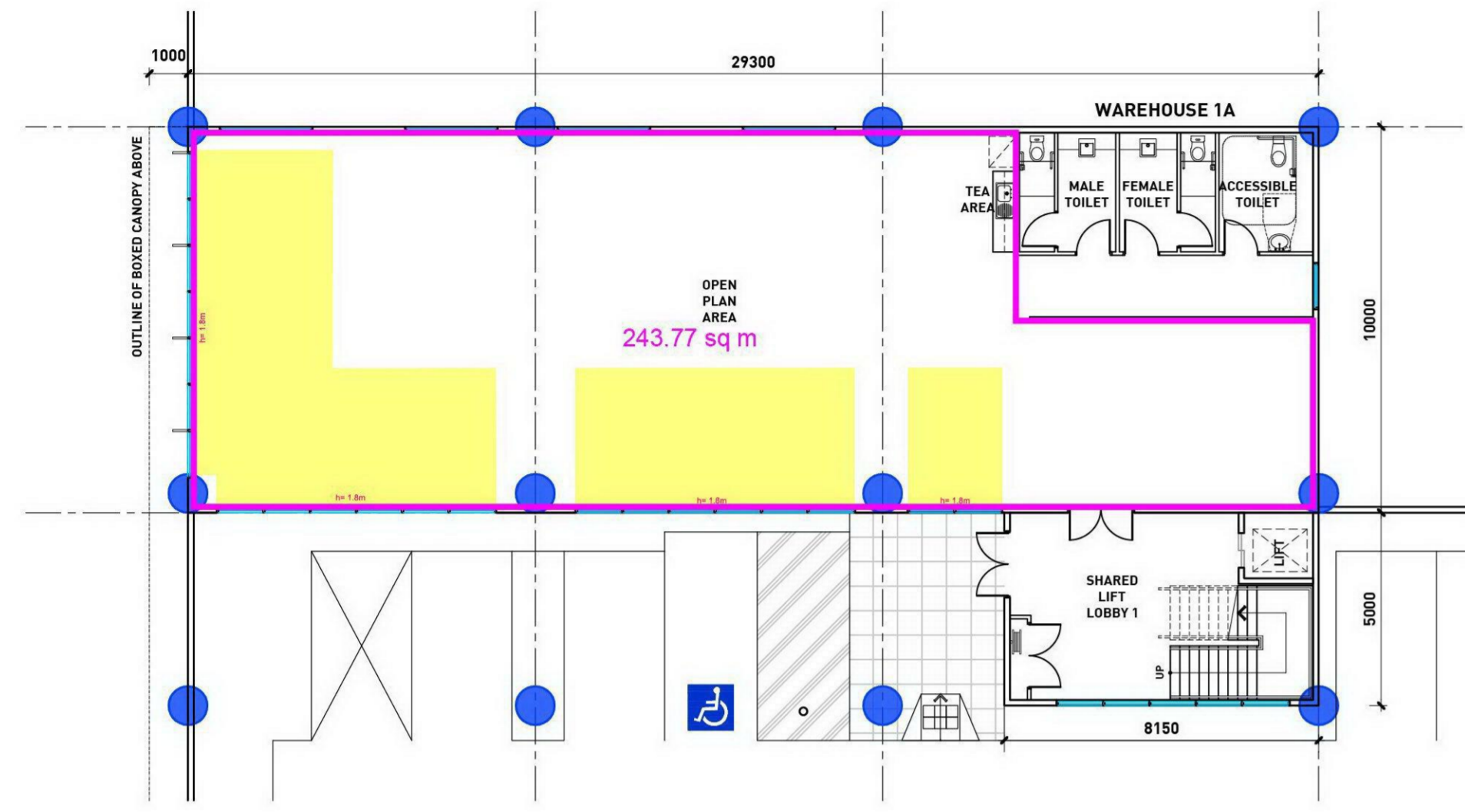
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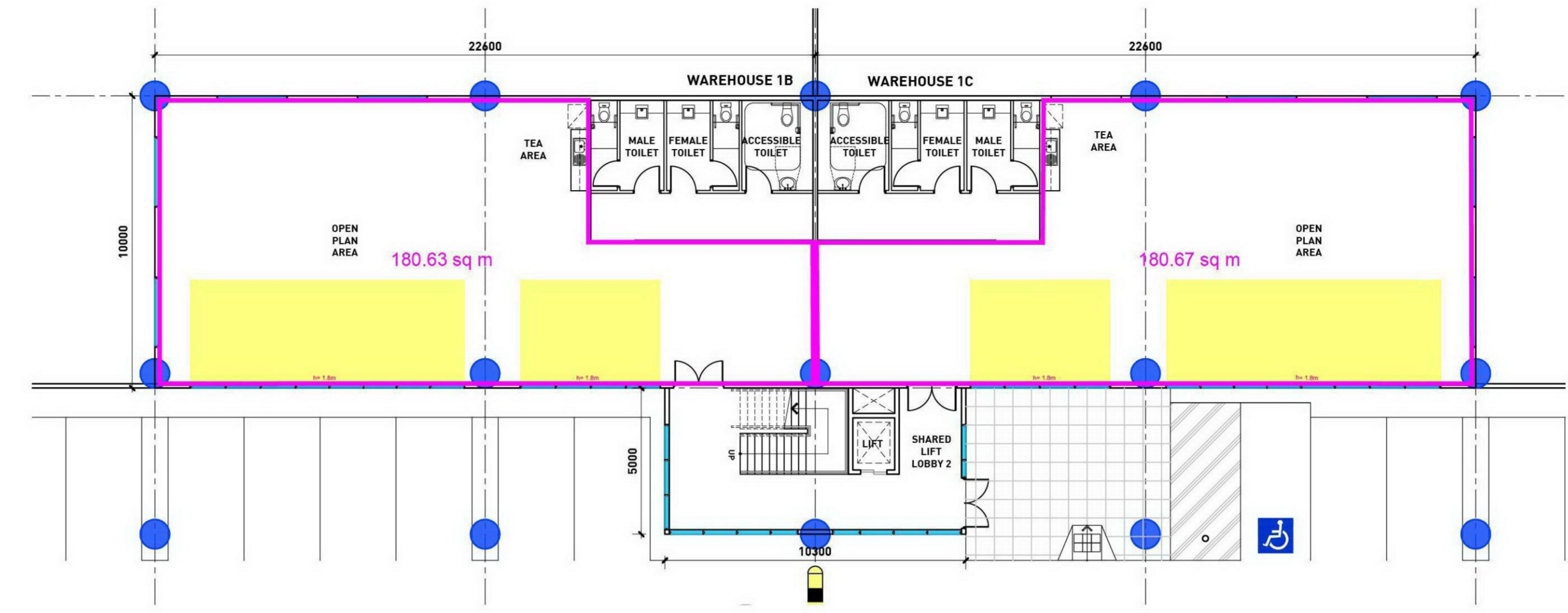
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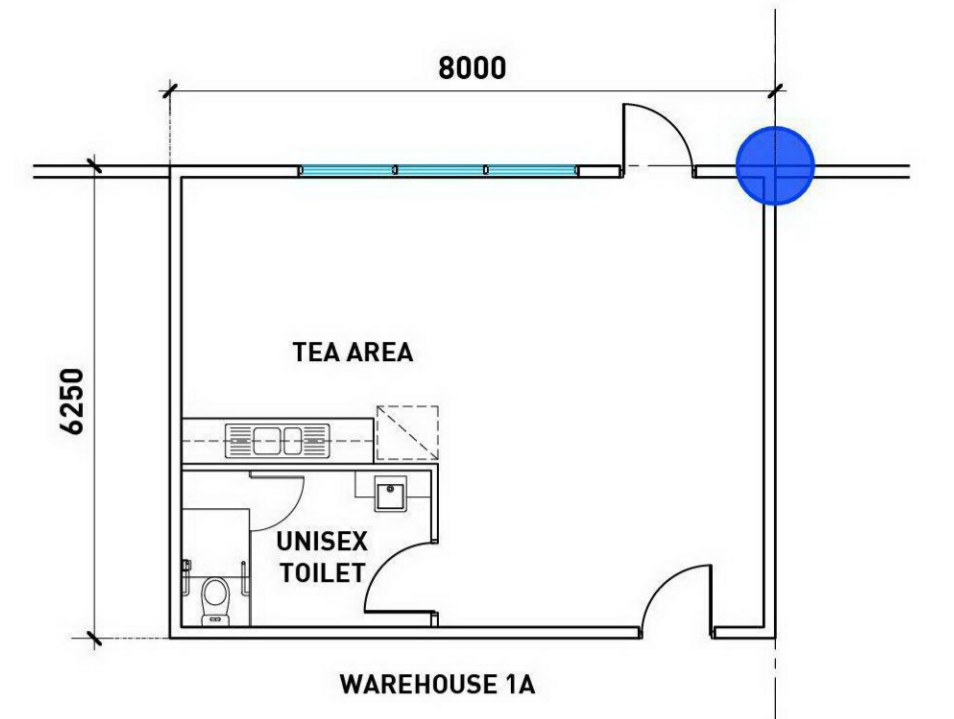
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SUBJECT TO STATUTORY APPROVAL



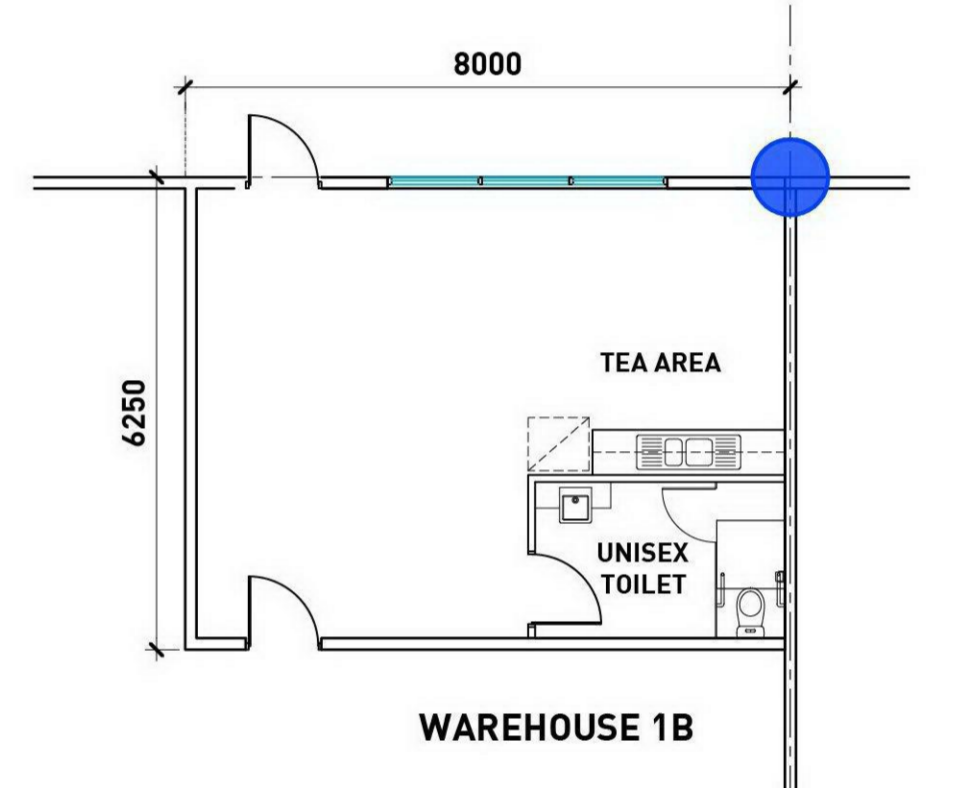
01 OFFICE 1A -MEZZANINE FLOOR PLAN



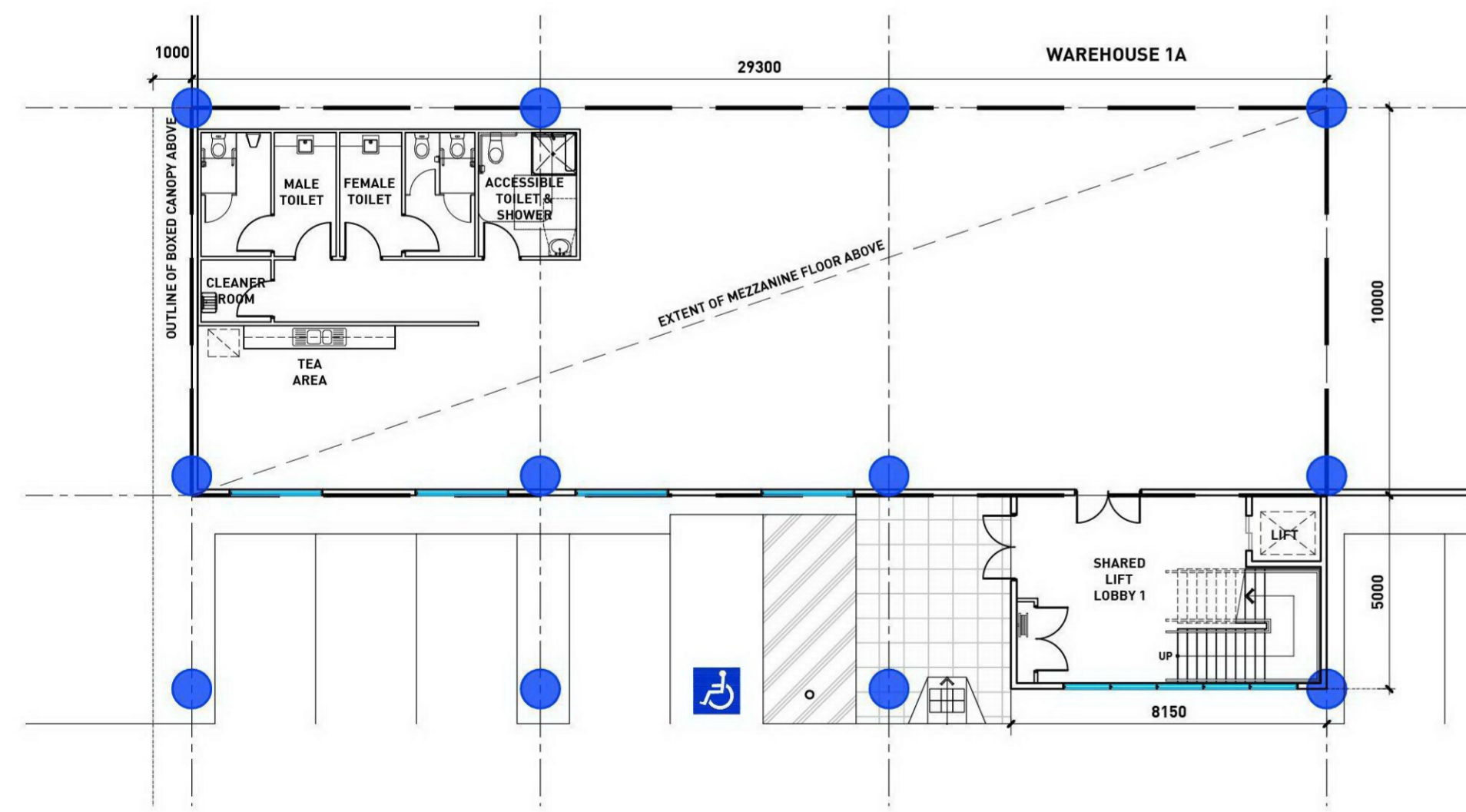
03 OFFICE 1B & 1C -MEZZANINE FLOOR PLAN



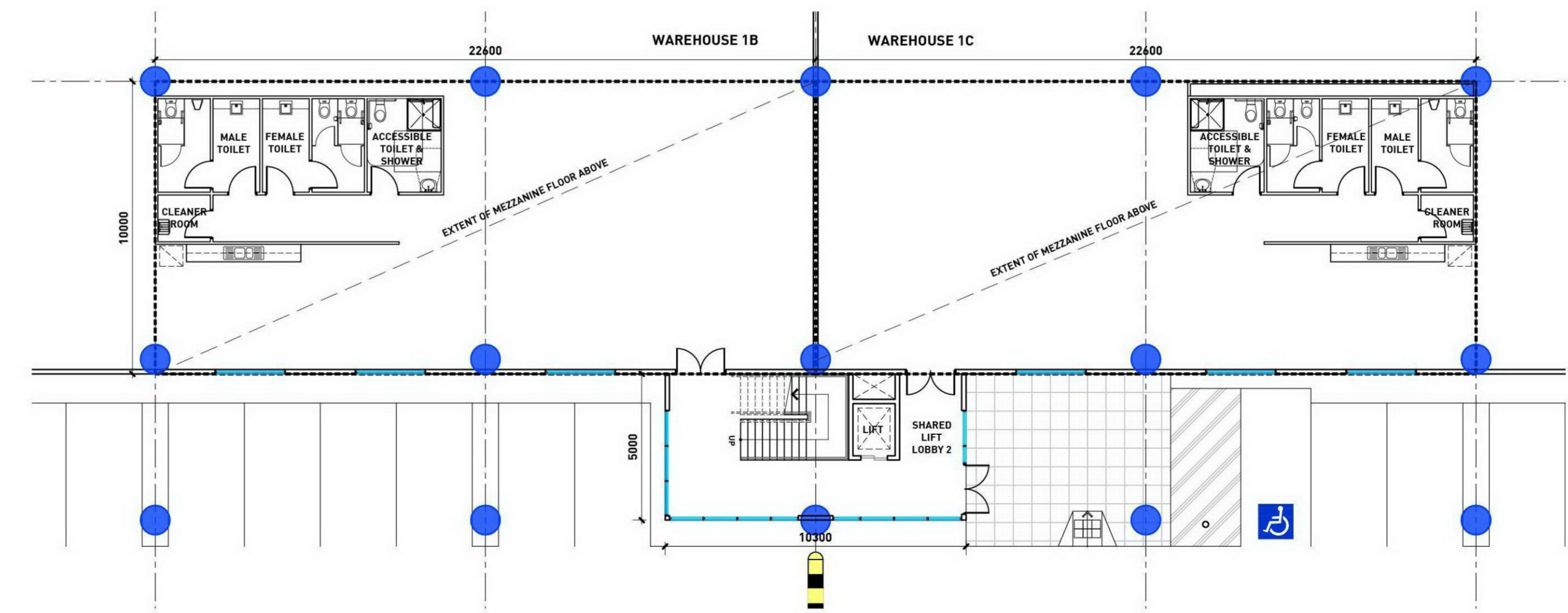
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SCALE: 1:100



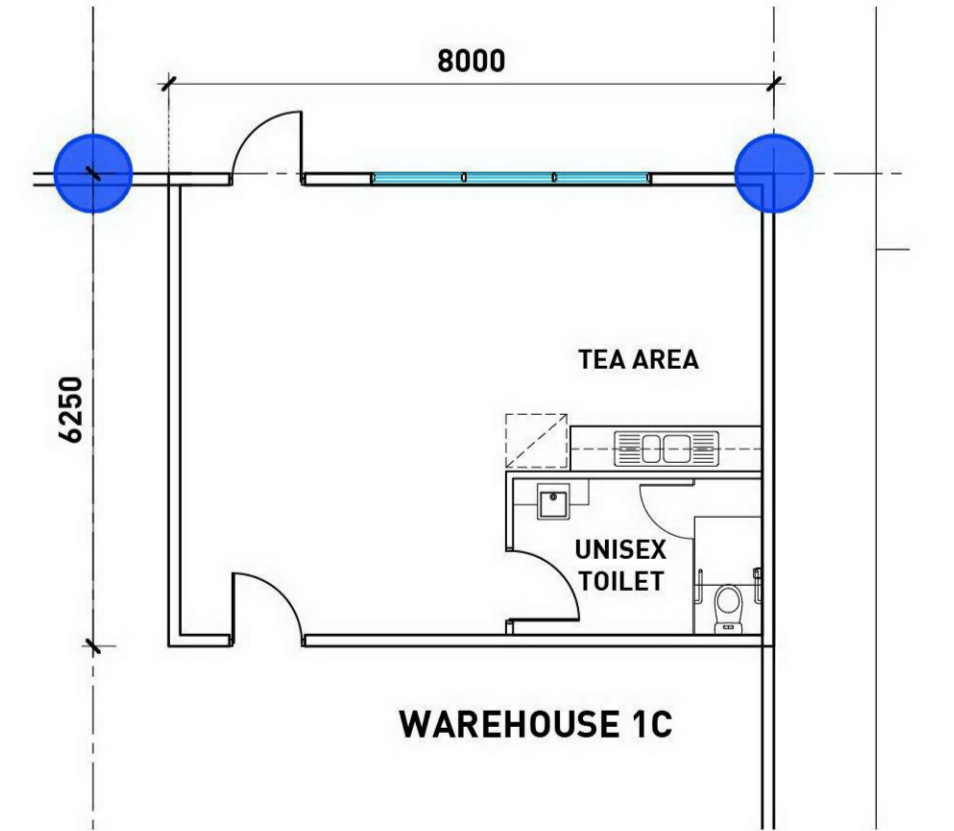
06 DOCK OFFICE 1B FLOOR PLAN  
SCALE: 1:100



02 OFFICE 1A - GROUND FLOOR PLAN



04 OFFICE 1B & 1C - GROUND FLOOR PLAN



07 DOCK OFFICE 1C FLOOR PLAN  
SCALE: 1:100

CLIENT:

**dexus**

**concept**

Suite 307  
546 Collins Street  
Melbourne VIC 3000

t: (03) 9978 9888  
e: architect@concepty.com.au

**PROPOSED DEVELOPMENT**

Axxess Corporate Park, 1-31 Gilby Road, Mount Waverley VIC

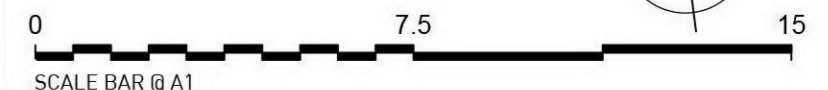
**OFFICE PLANS**  
**OFFICE 1A, 1B, & 1C**

DRAWING TYPE:  
DEVELOPMENT APPLICATION

DRAWING NUMBER:  
2209-122-DA-110

REVISION:  
A

DATE: 9.12.2022  
SCALE: 1:150 @ A1 / 1:300 @ A3




SCALE BAR @ A1


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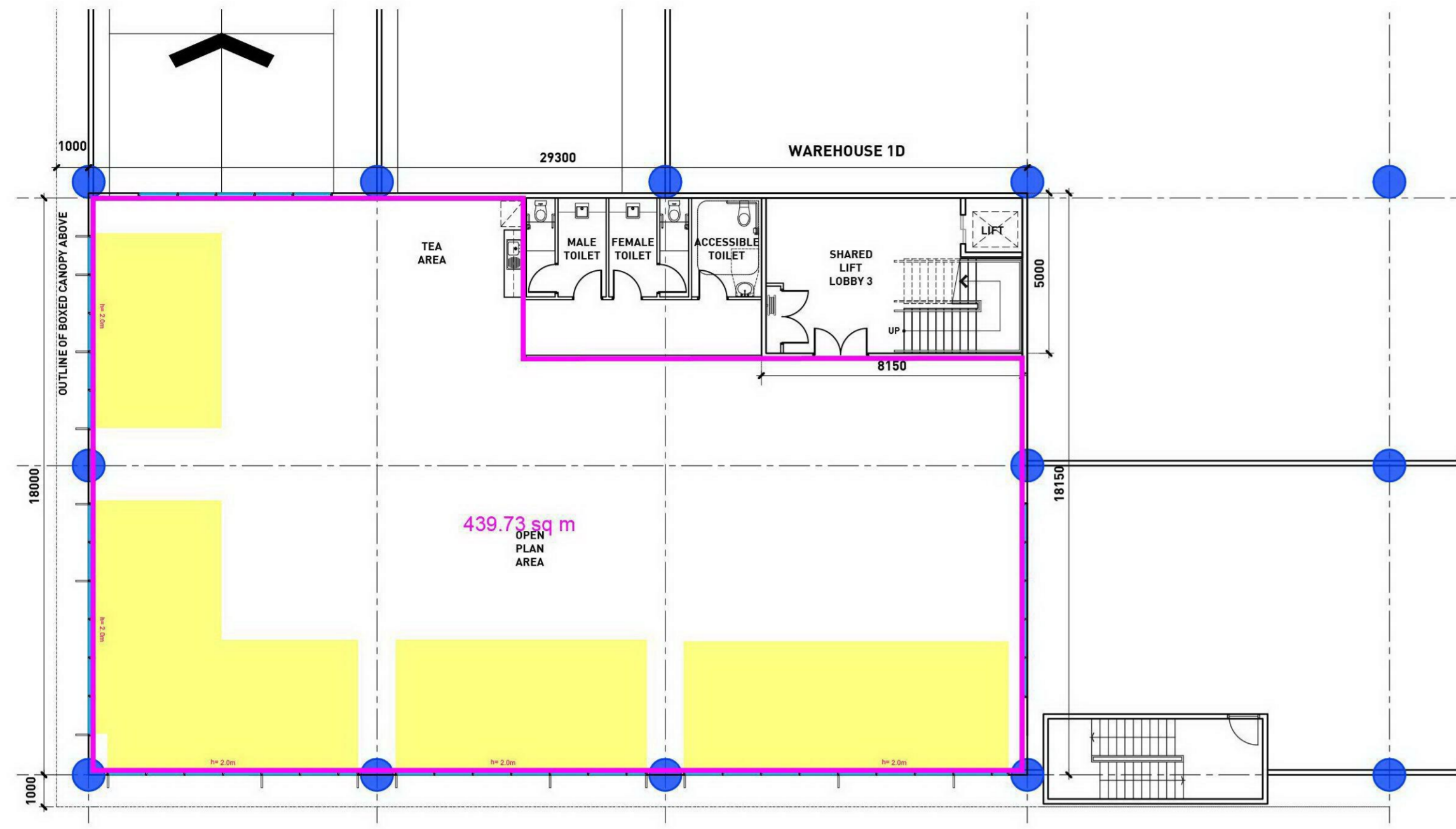
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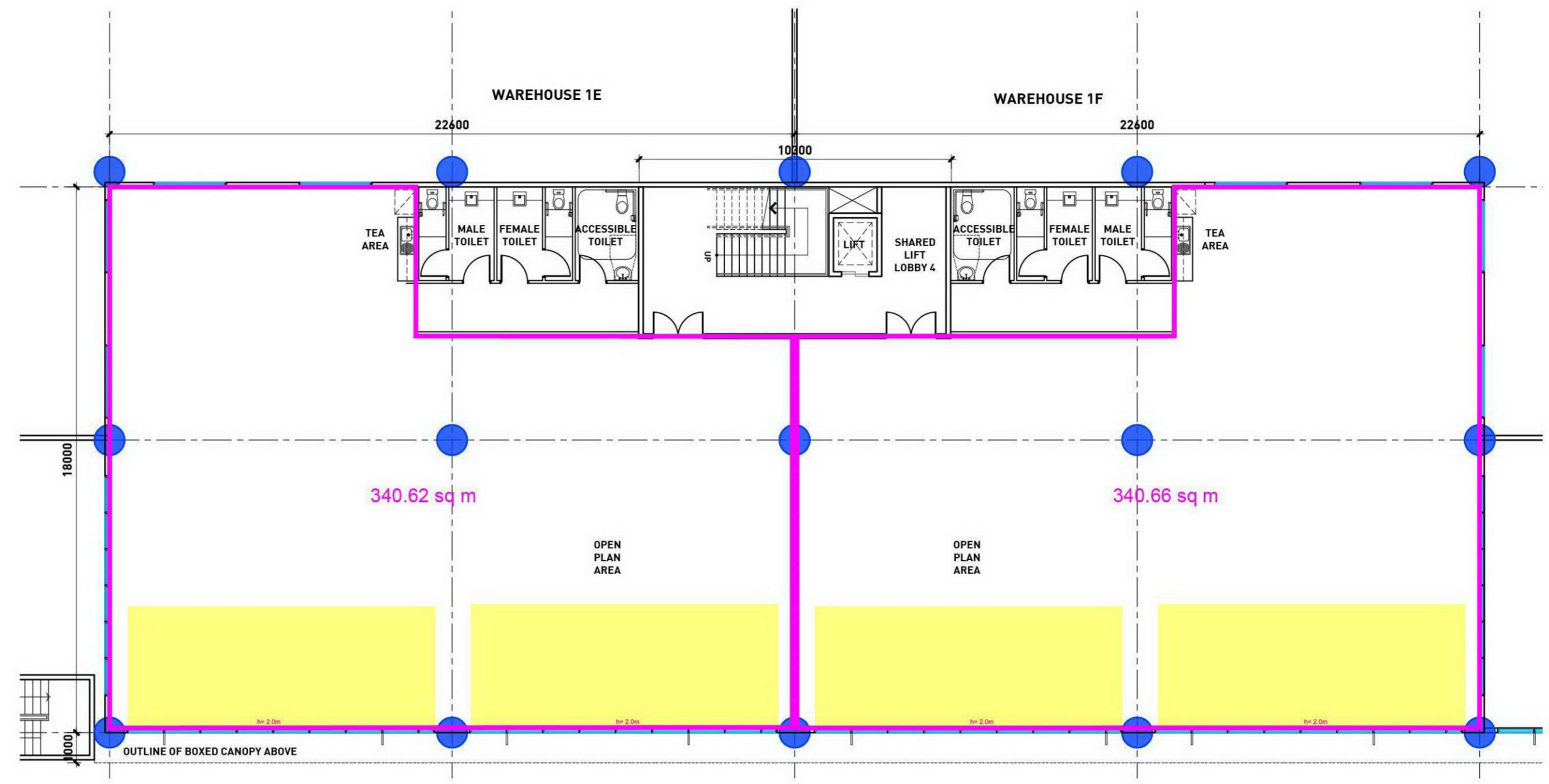
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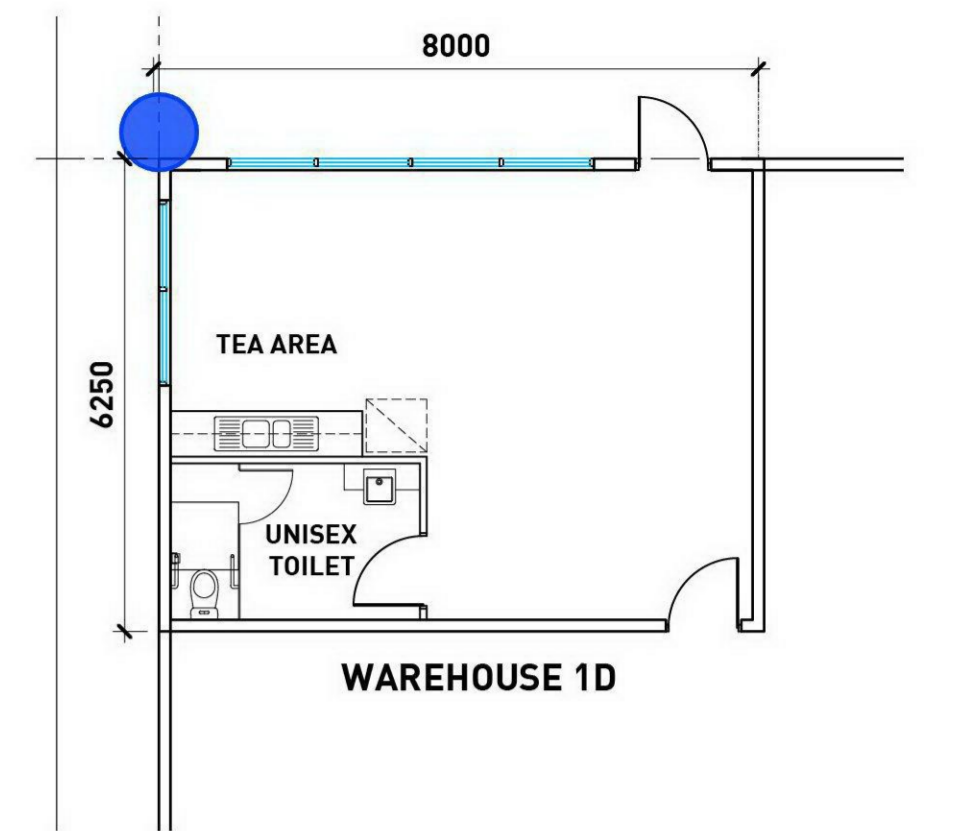
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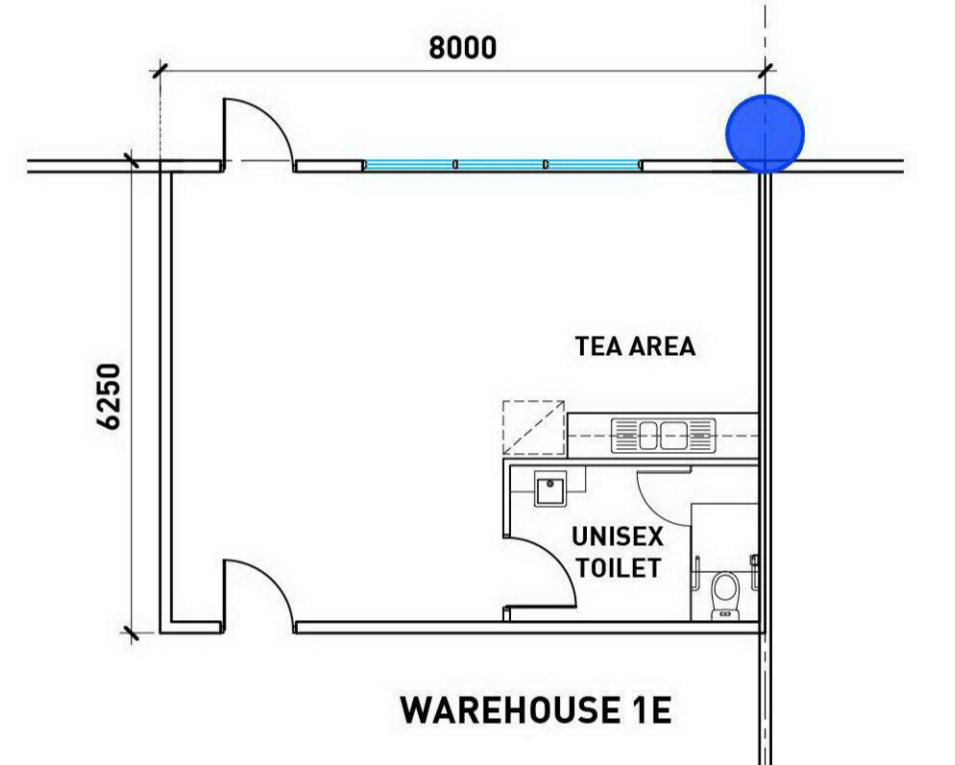
01 OFFICE 1D - FIRST FLOOR MEZZANINE PLAN



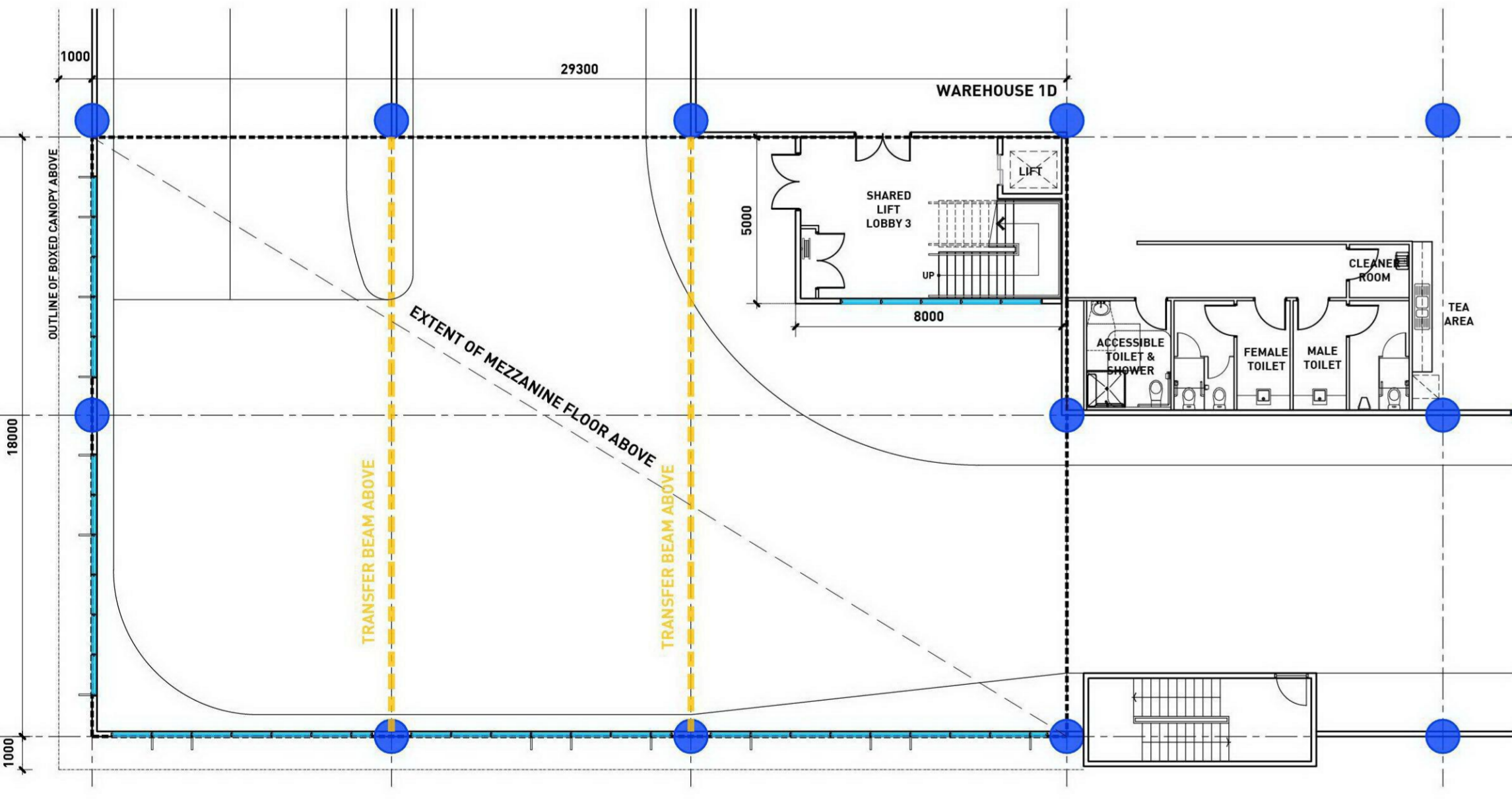
03 OFFICE 1E & 1F - FIRST FLOOR MEZZANINE PLAN



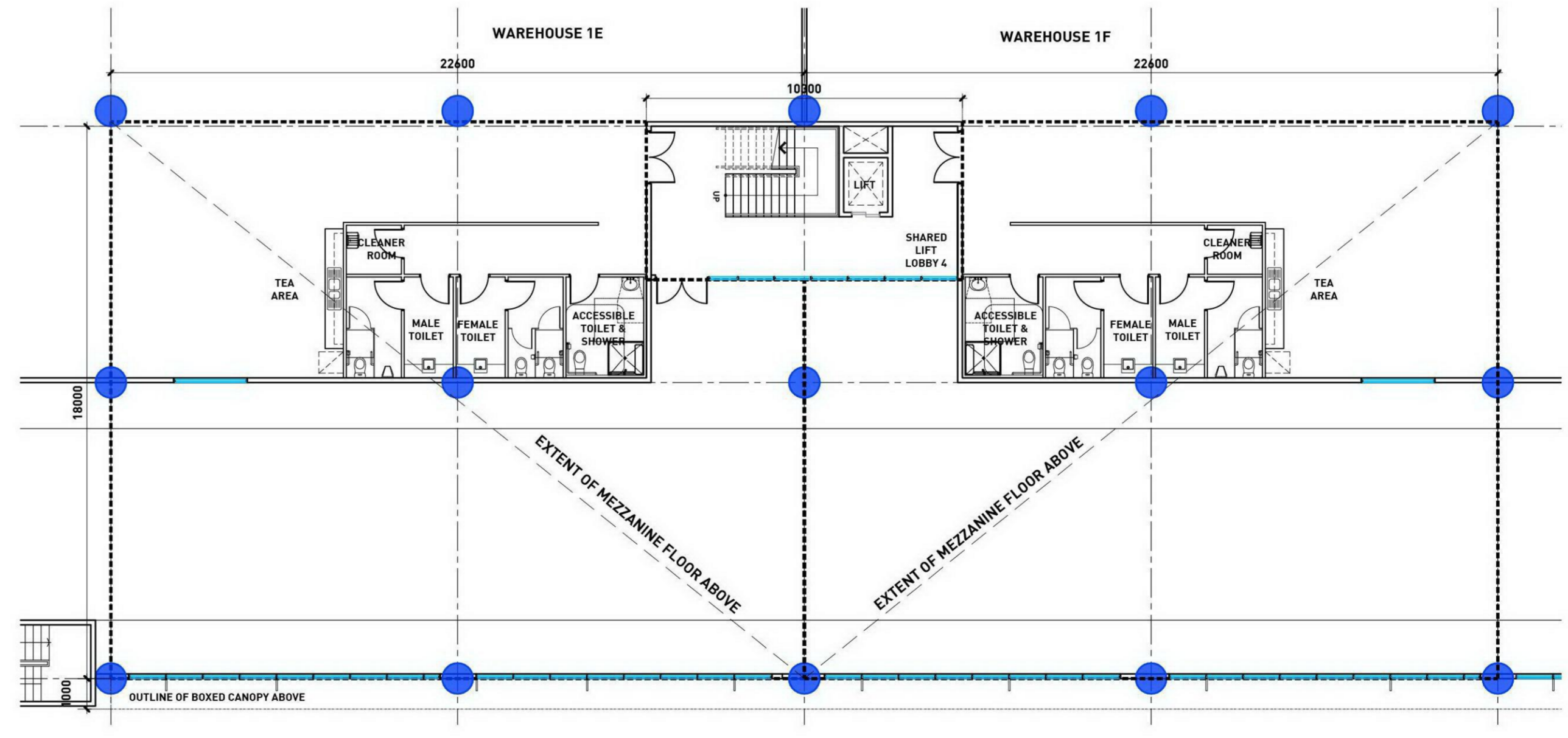
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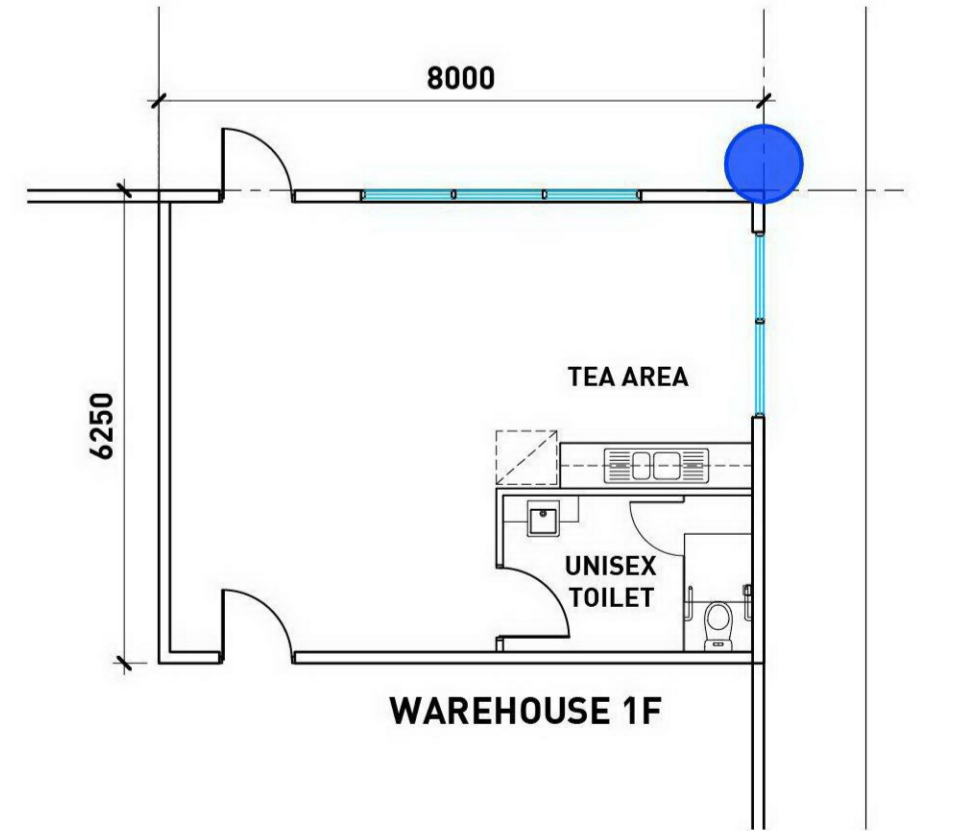
06 DOCK OFFICE 1E FLOOR PLAN  
SCALE: 1:100



02 OFFICE 1D - FIRST FLOOR PLAN



04 OFFICE 1E & 1F - FIRST FLOOR PLAN



07 DOCK OFFICE 1F FLOOR PLAN  
SCALE: 1:100

CLIENT:

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**NOTE:**

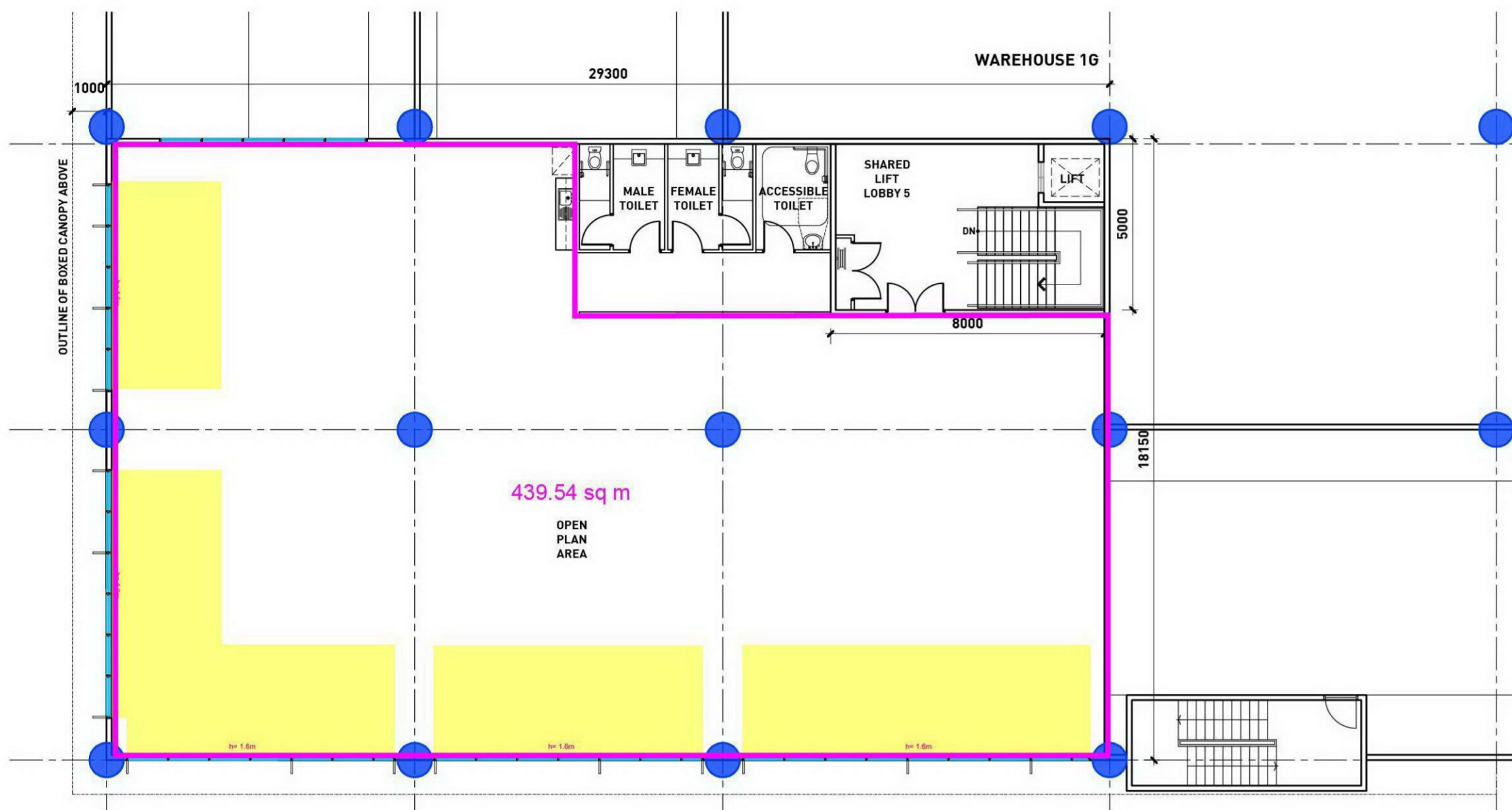
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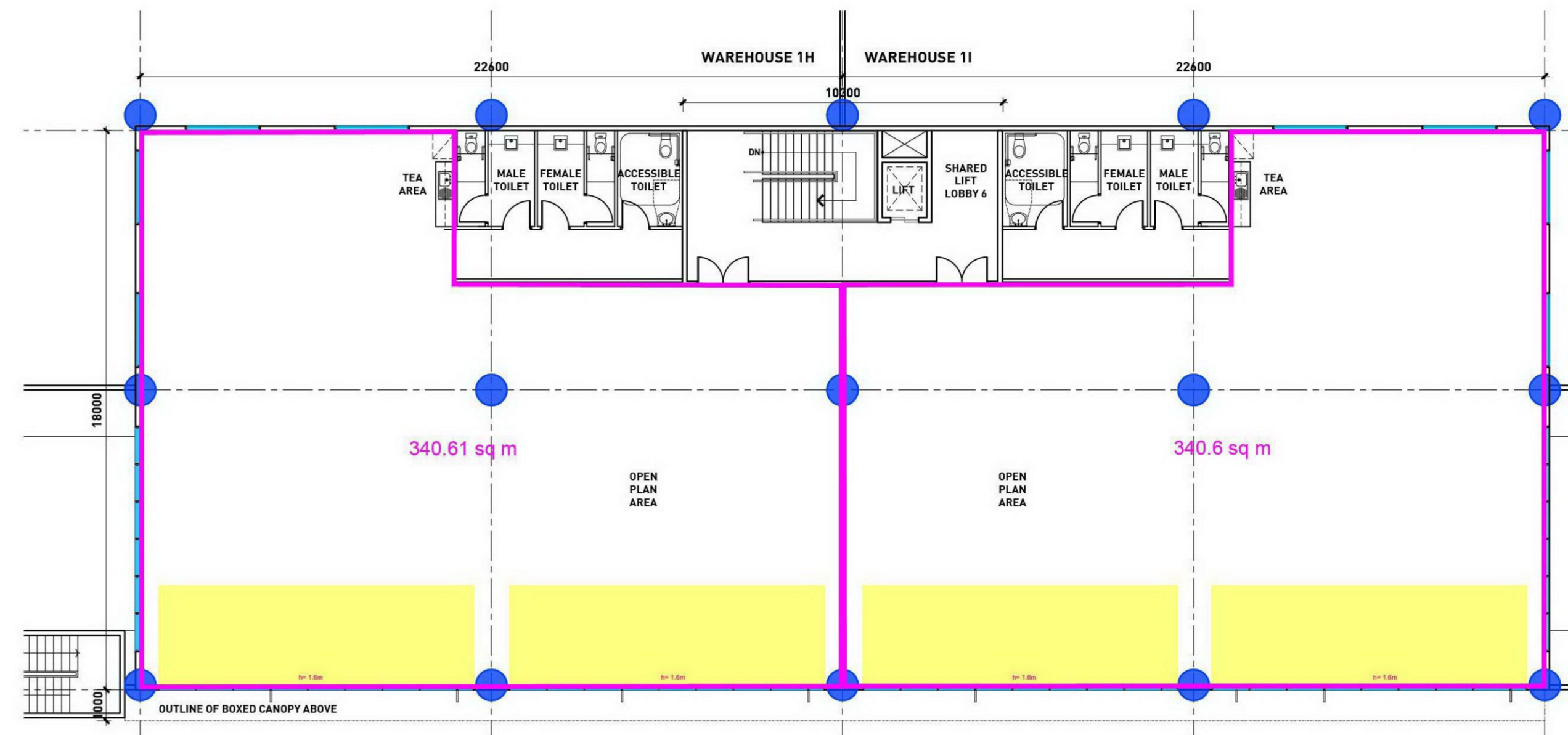
Total Area

Compliant Area

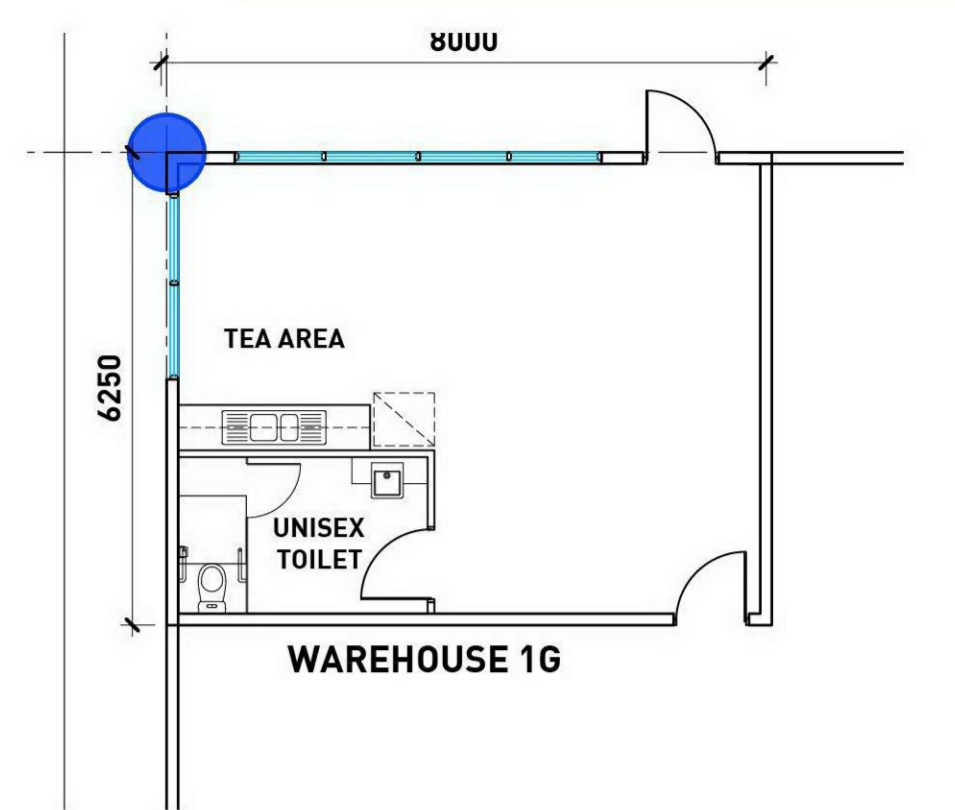
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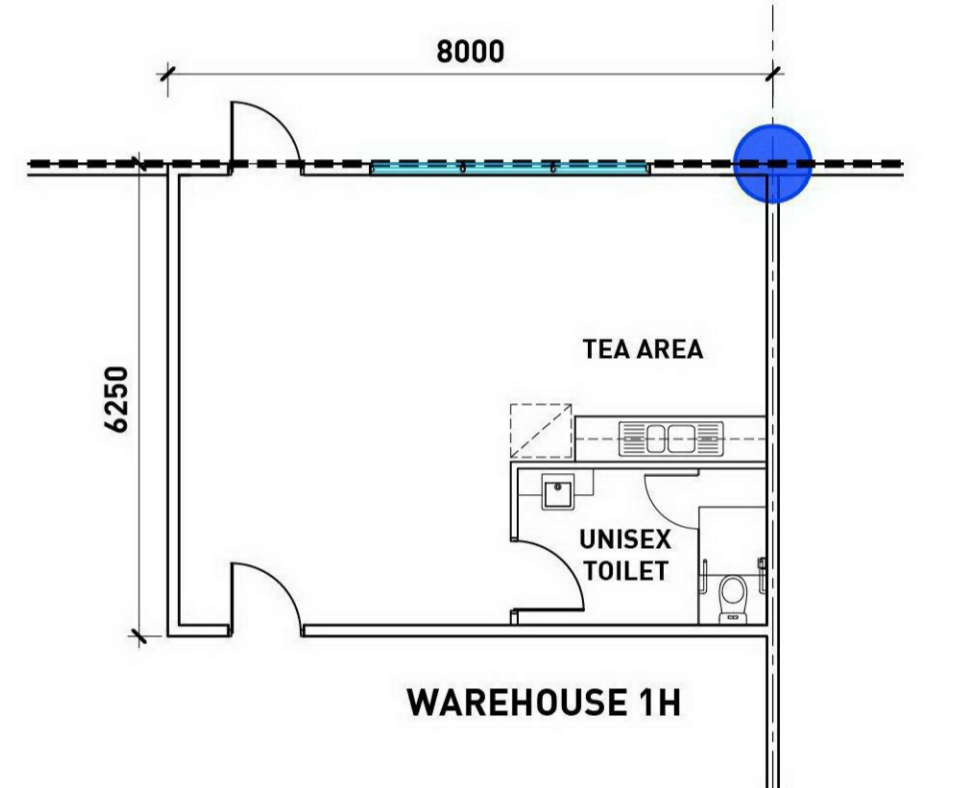
01 OFFICE 1G - SECOND FLOOR MEZZANINE PLAN



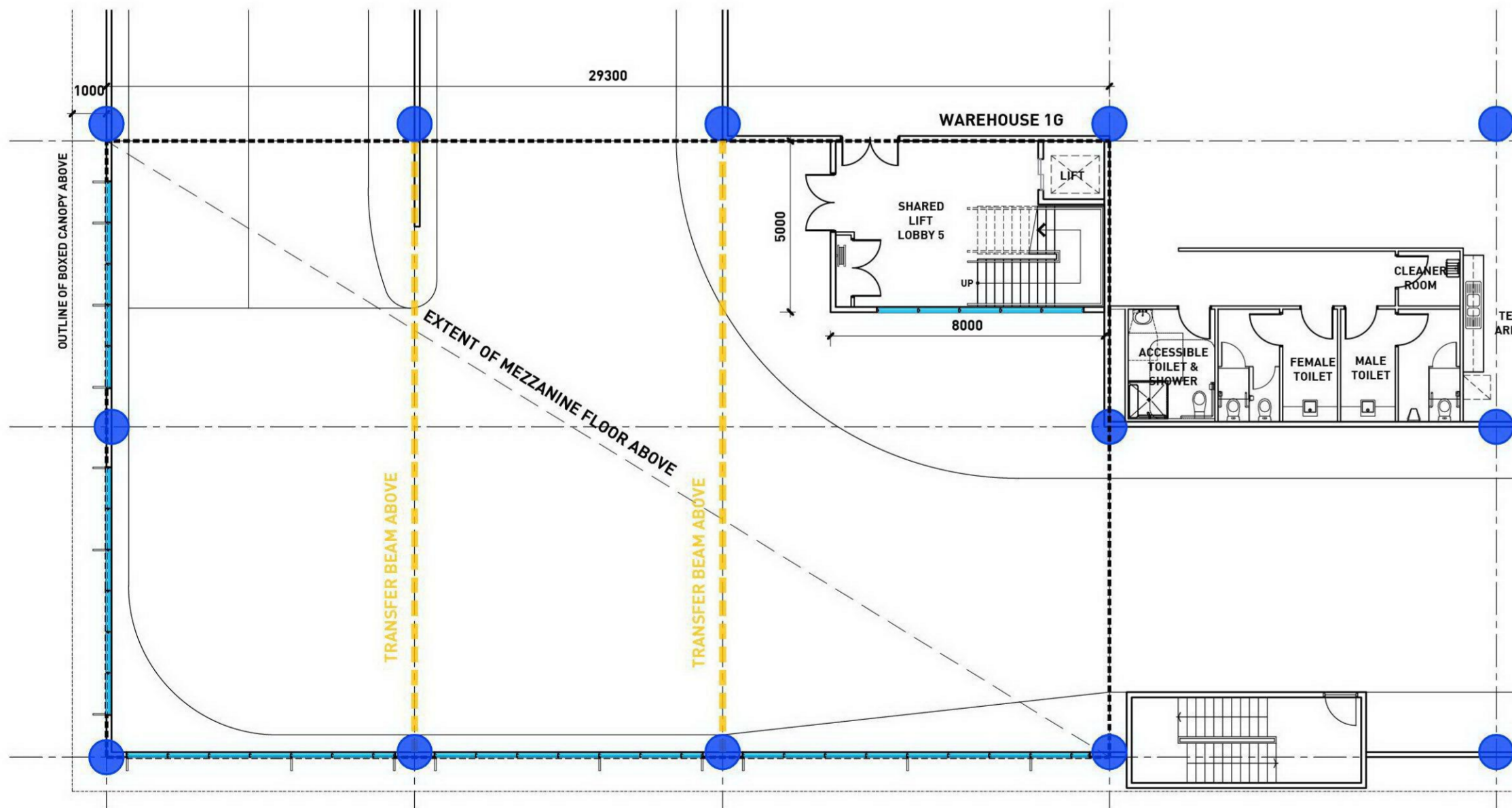
03 OFFICE 1H & 1I - SECOND FLOOR MEZZANINE PLAN



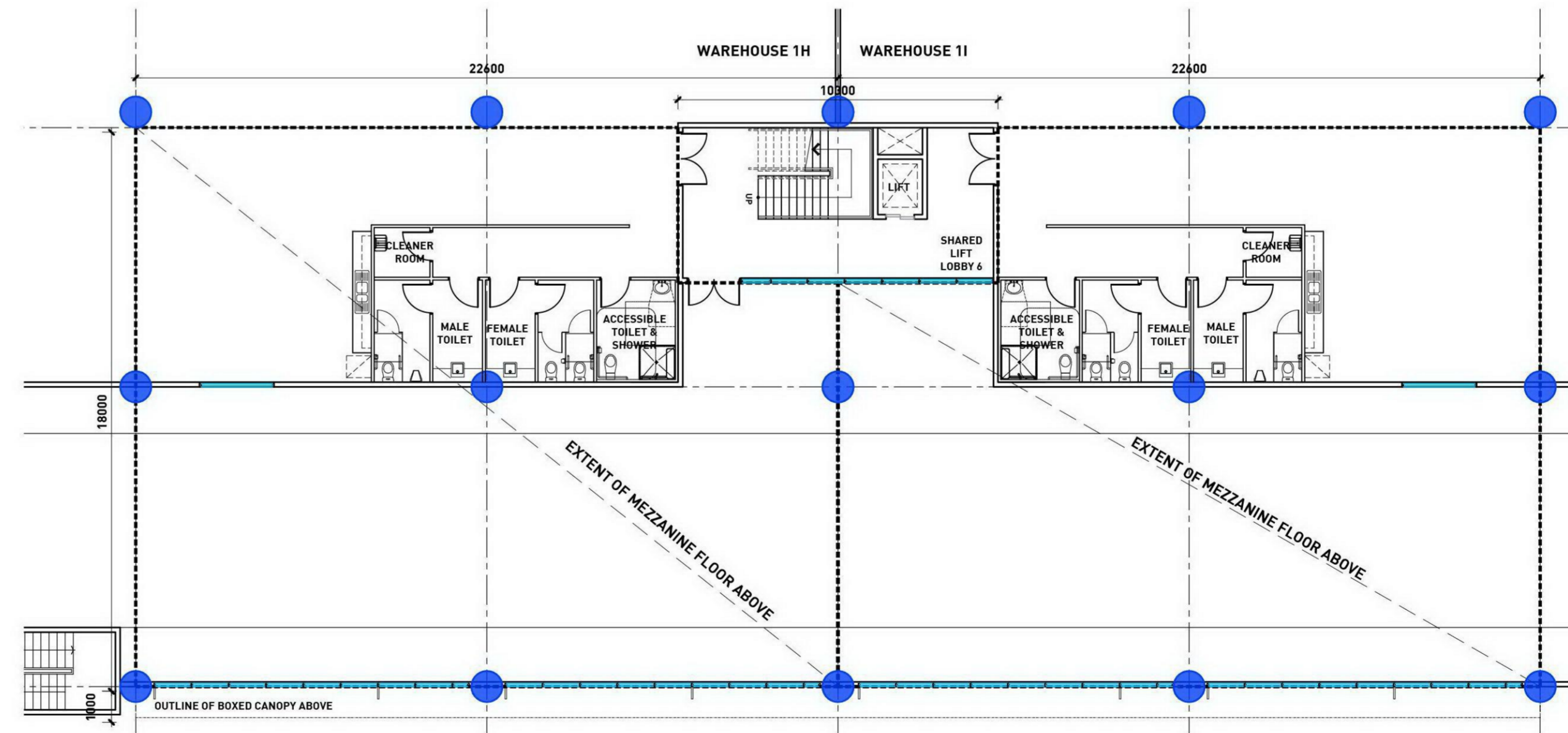
05 DOCK OFFICE 1G FLOOR PLAN  
SCALE: 1:100



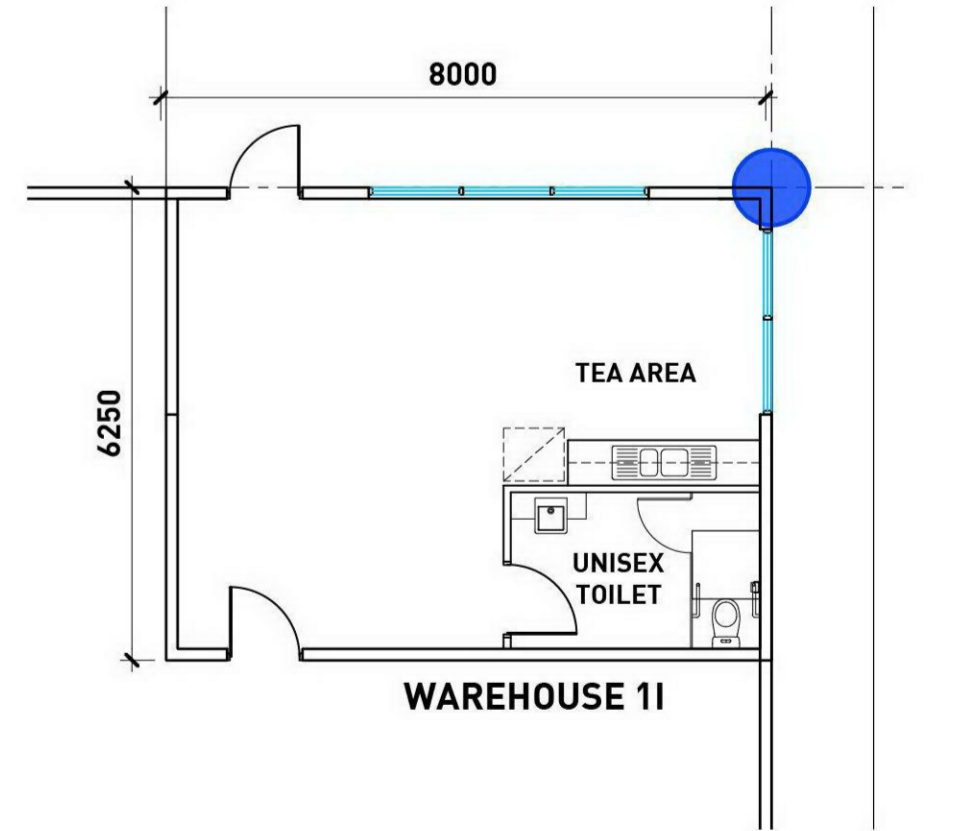
06 DOCK OFFICE 1H FLOOR PLAN  
SCALE: 1:100



02 OFFICE 1G - SECOND FLOOR PLAN



04 OFFICE 1H & 1I - SECOND FLOOR PLAN



07 DOCK OFFICE 1I FLOOR PLAN  
SCALE: 1:100

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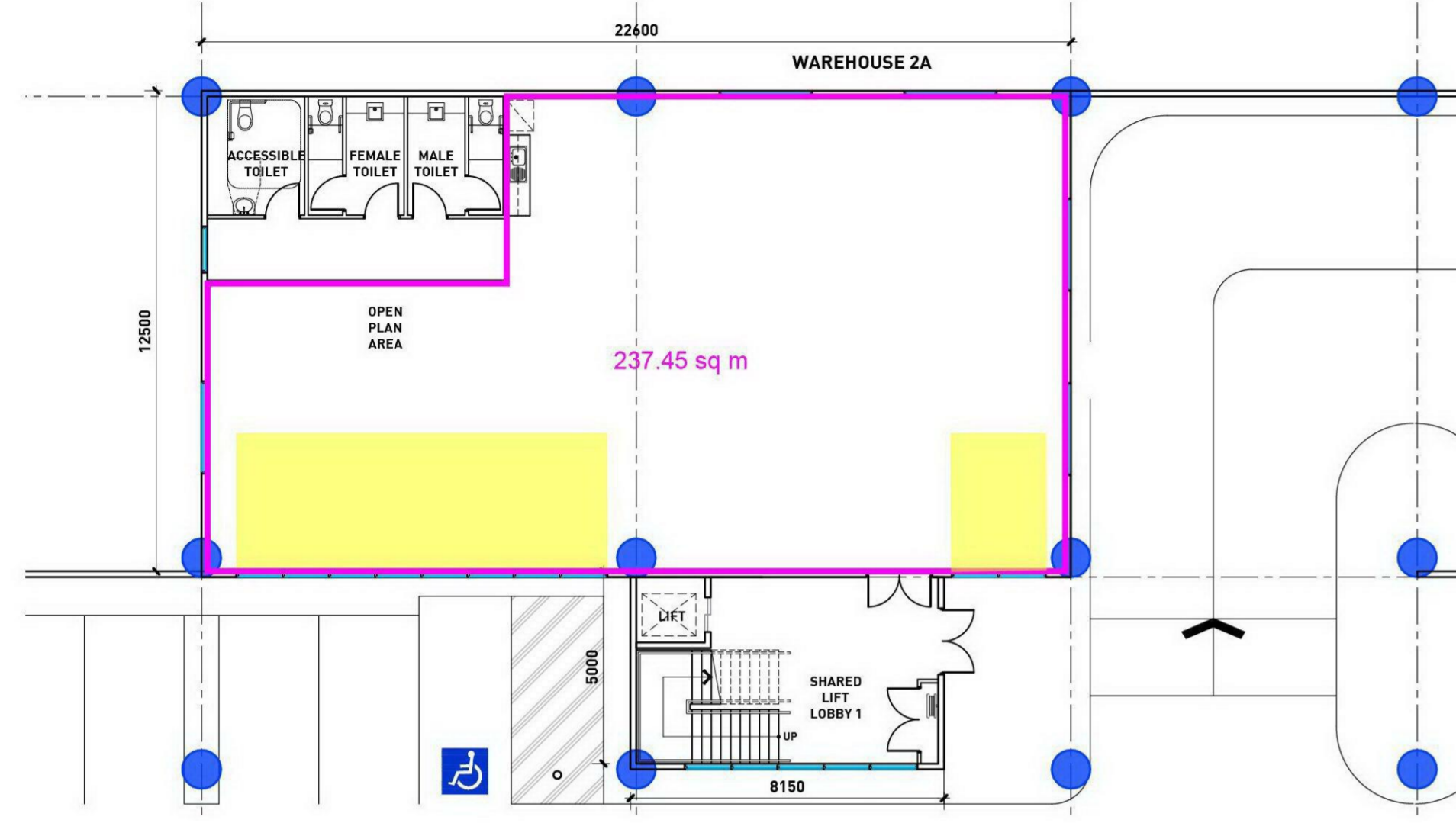
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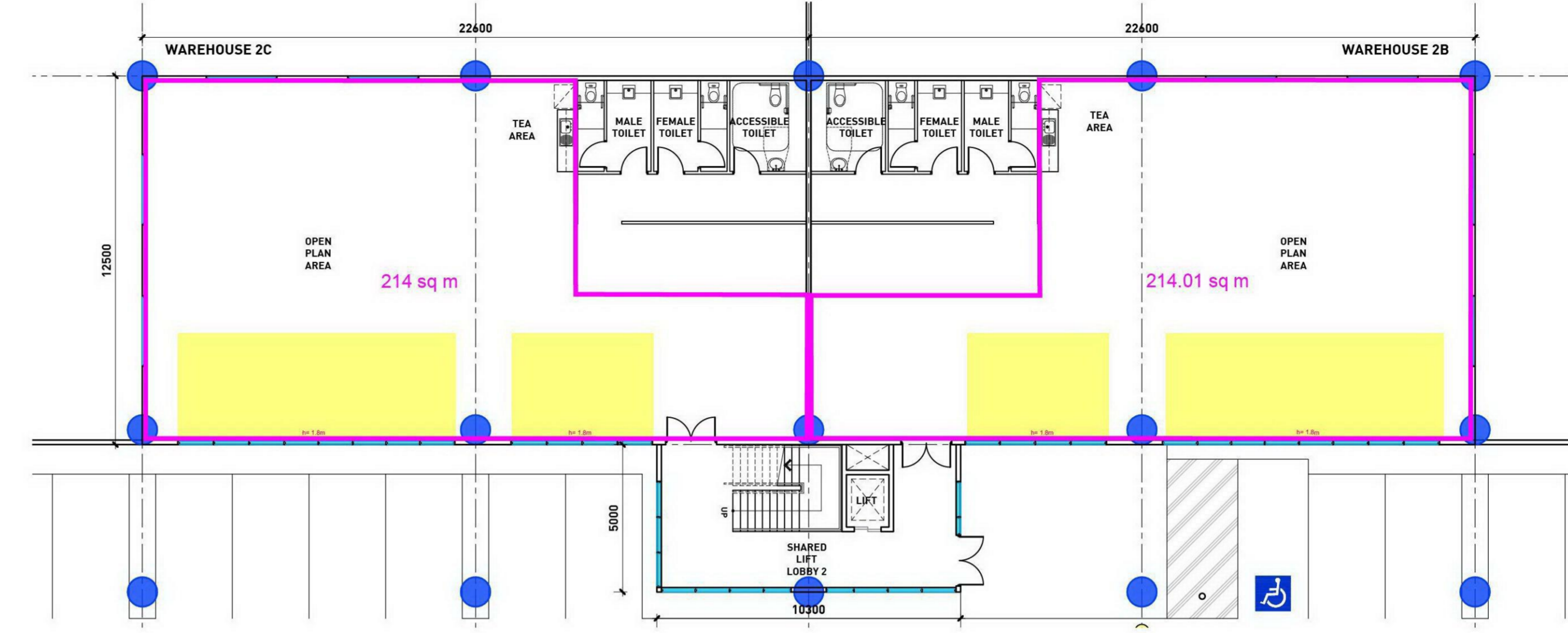
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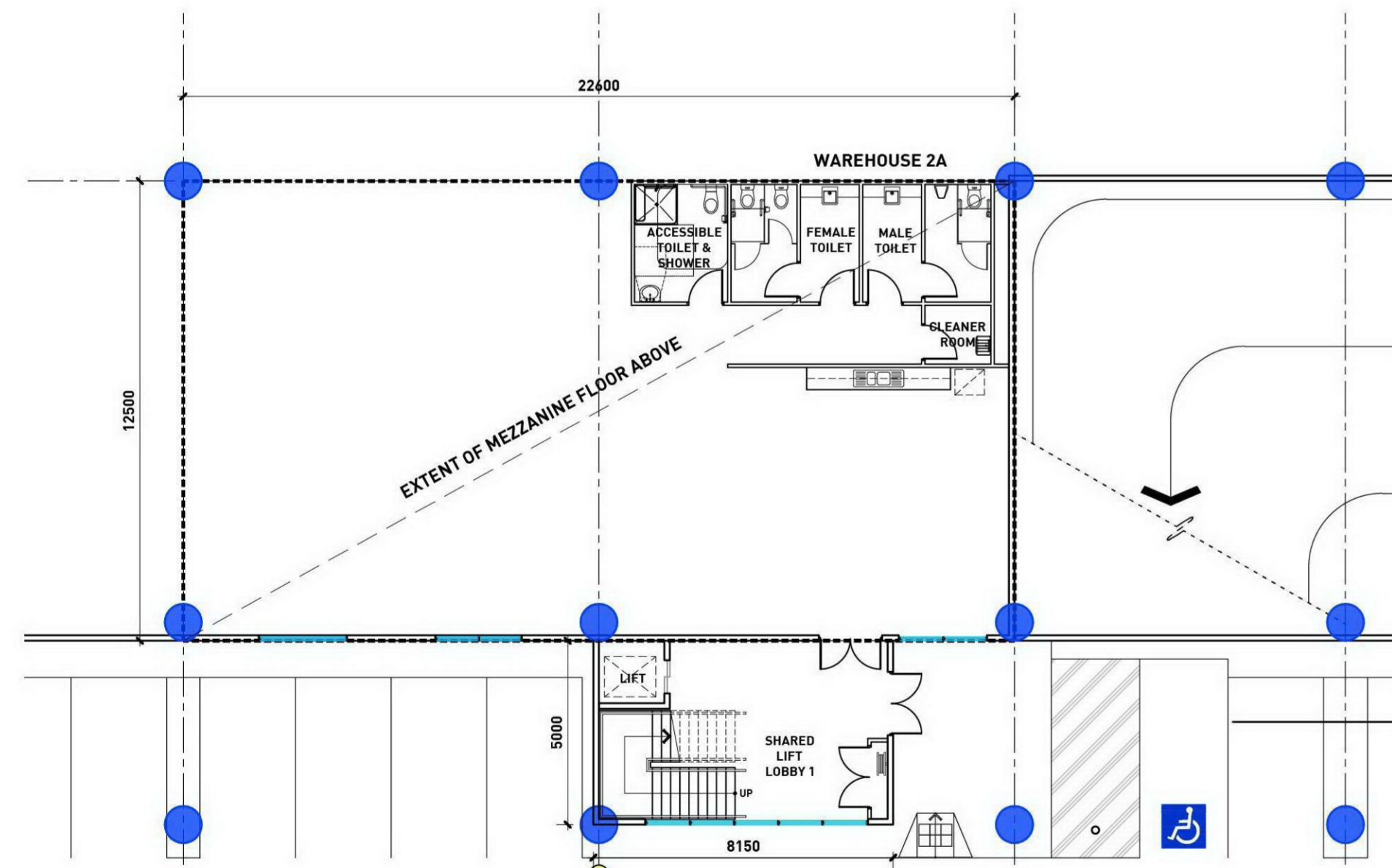
**FOR DEVELOPMENT APPLICATION ONLY**  
SUBJECT TO STATUTORY APPROVAL



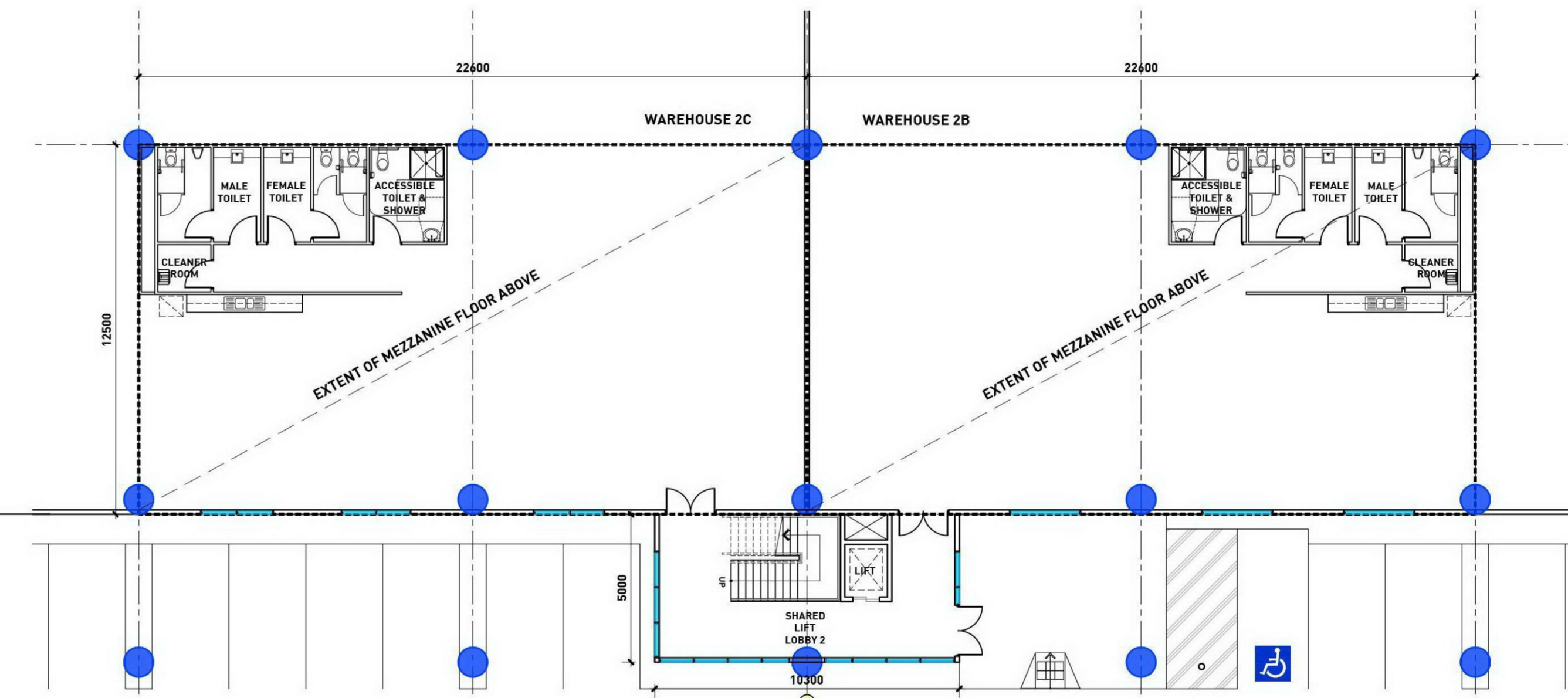
01 OFFICE 2A -SECOND FLOOR DECK PARK LEVEL



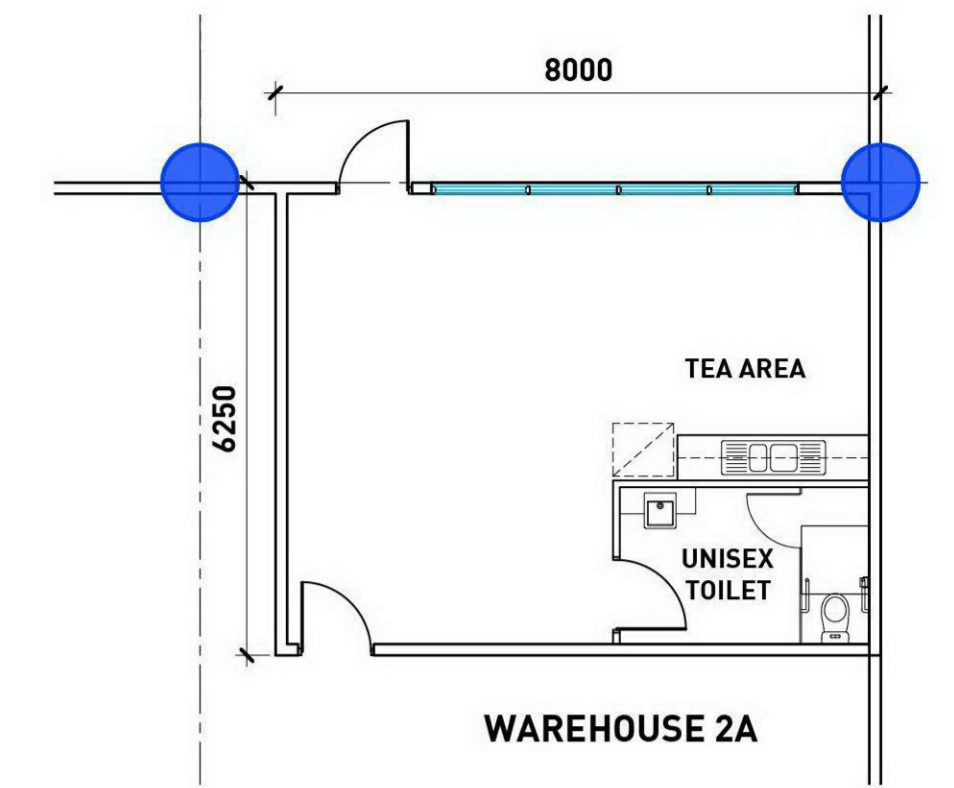
03 OFFICE 2B & 2C -SECOND FLOOR DECK PARK LEVEL



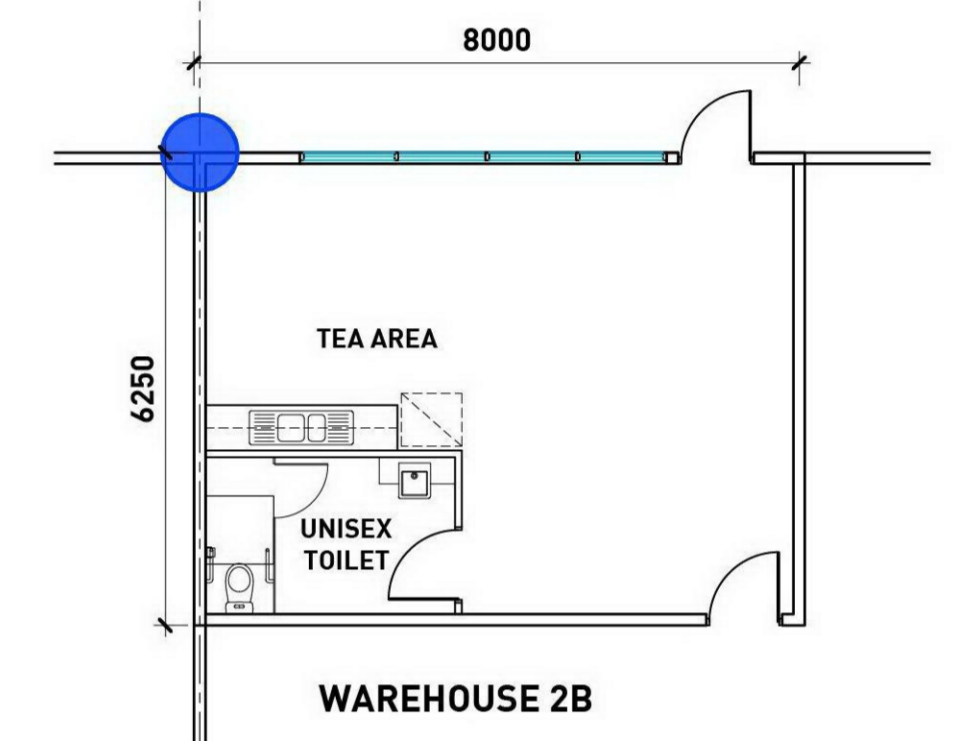
02 OFFICE 2A GROUND FLOOR PLAN



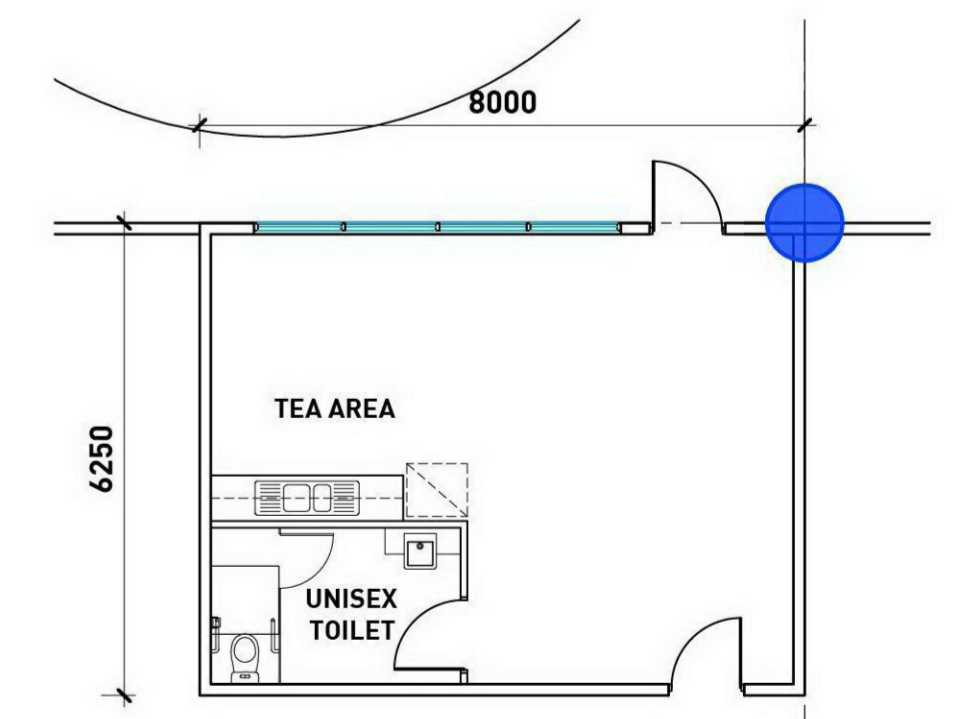
04 OFFICE 2B & 2C - GROUND FLOOR PLAN



05 DOCK OFFICE 2A FLOOR PLAN  
SCALE: 1:100



06 DOCK OFFICE 2B FLOOR PLAN  
SCALE: 1:100



07 DOCK OFFICE 2C FLOOR PLAN  
SCALE: 1:100

CLIENT:

**dexus**

**concept**

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e: architect@concepty.com.au

**PROPOSED DEVELOPMENT**

Axxess Corporate Park, 1-31 Gilby Road, Mount Waverley VIC

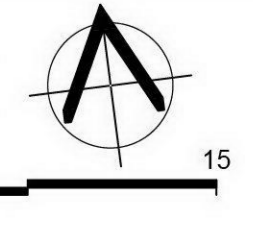
**OFFICE PLANS**  
**OFFICE 2A, 2B, & 2C**

DRAWING TYPE:  
DEVELOPMENT APPLICATION

DRAWING NUMBER:  
2209-122-DA-113

REVISION:  
A

DATE: 9.12.2022  
SCALE: 1:150 @ A1 / 1:300 @ A3



SCALE BAR @ A1



**NOTE:**

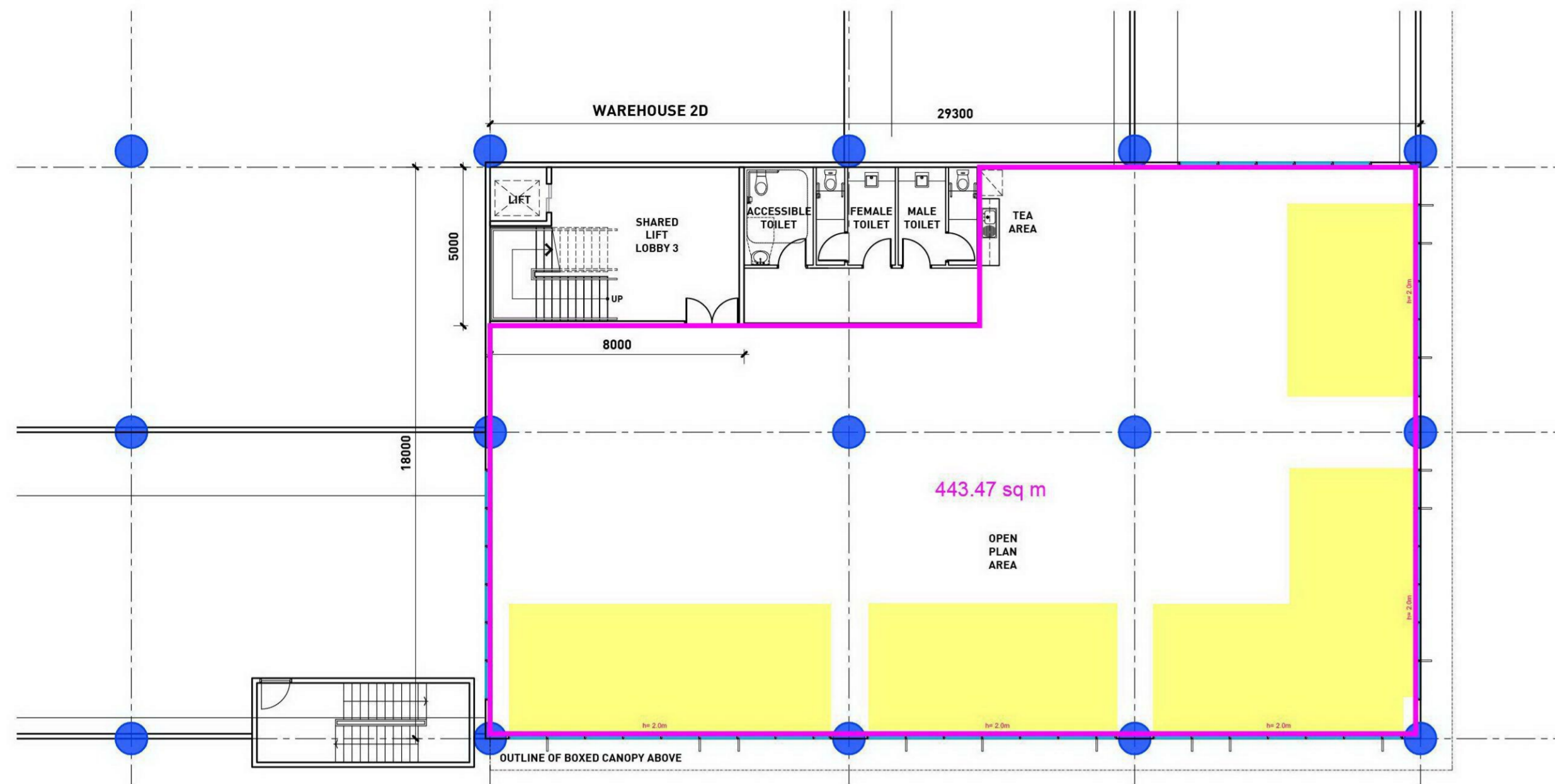
- This concept plan is intended for Development Application purposes only. All setbacks, site coverage, car parking numbers, landscape areas and the like are subject to statutory approval.
- No assurance is given as to the features, attributes, feasibility or accuracy of anything shown on or disclosed in this plan.
- All existing & proposed features, dimensions, areas and boundaries are approximate only and subject to verification via detailed site survey by licensed surveyor.

**LEGEND**

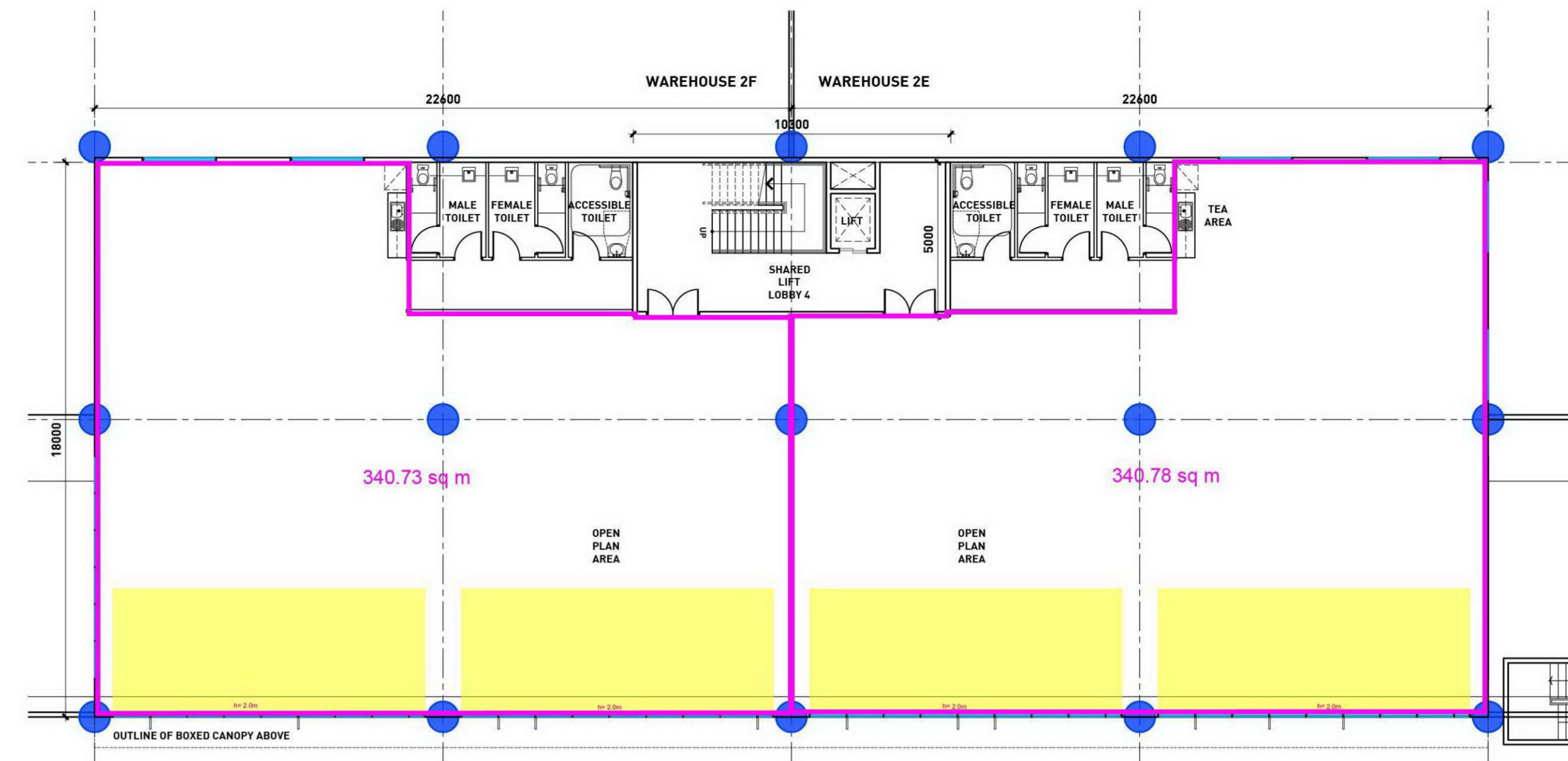
Total Area

Compliant Area

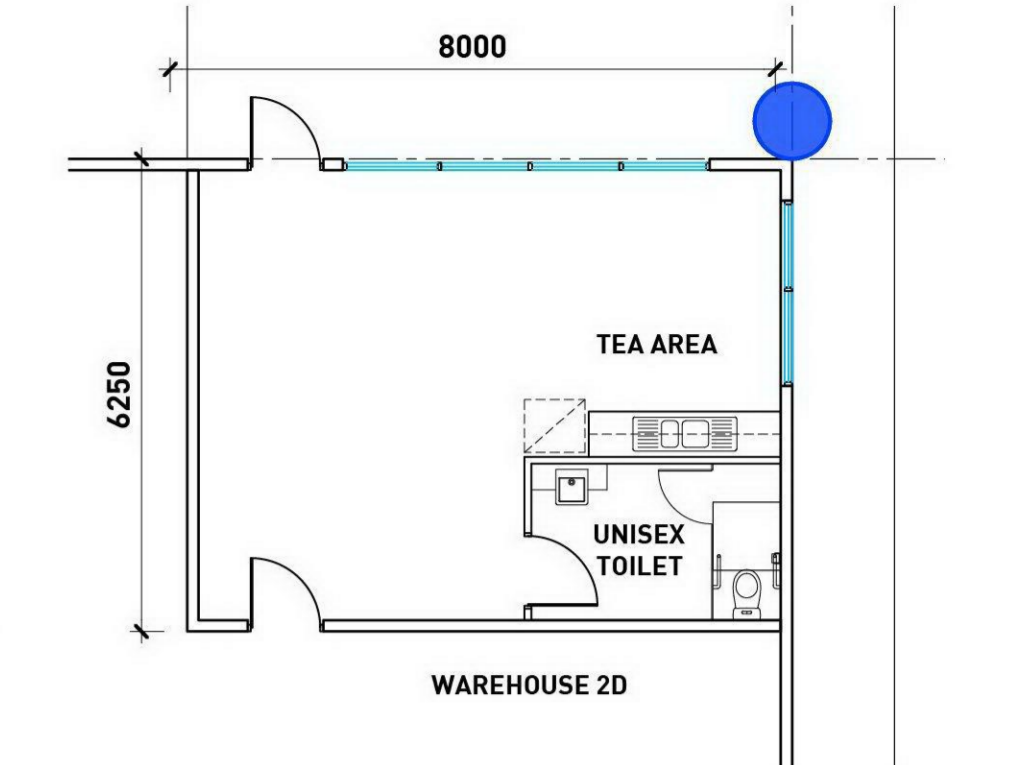
**FOR DEVELOPMENT APPLICATION ONLY**  
SUBJECT TO STATUTORY APPROVAL



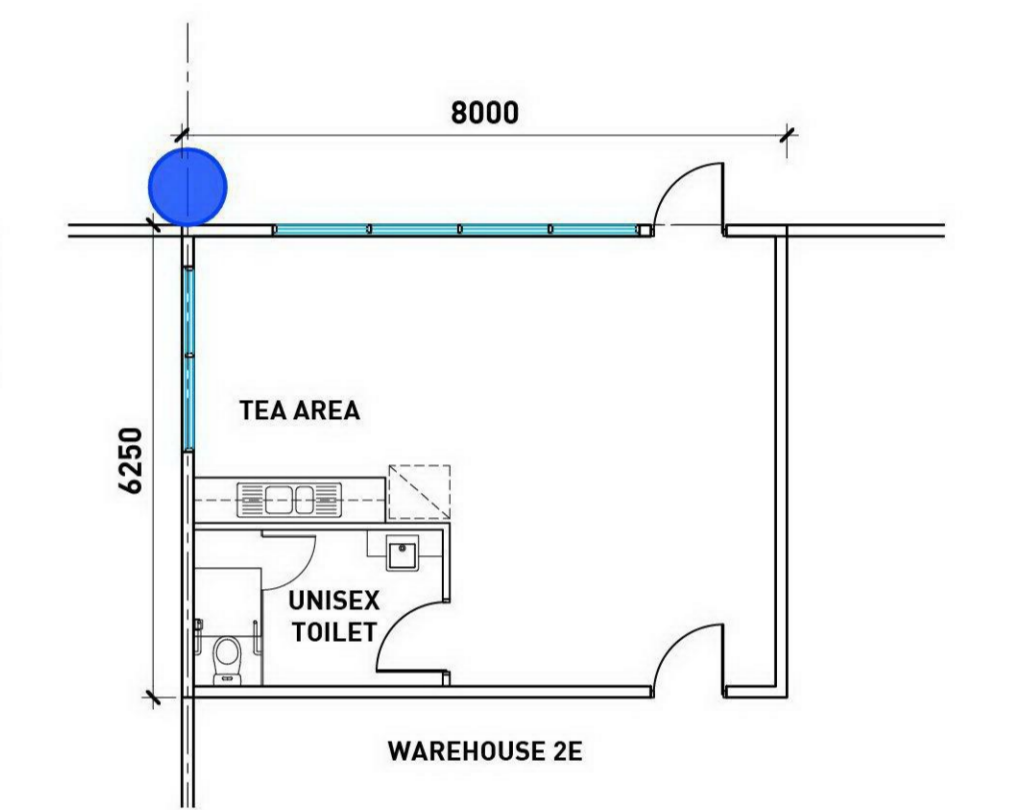
**01 OFFICE 2D - FIRST FLOOR MEZZANINE PLAN**



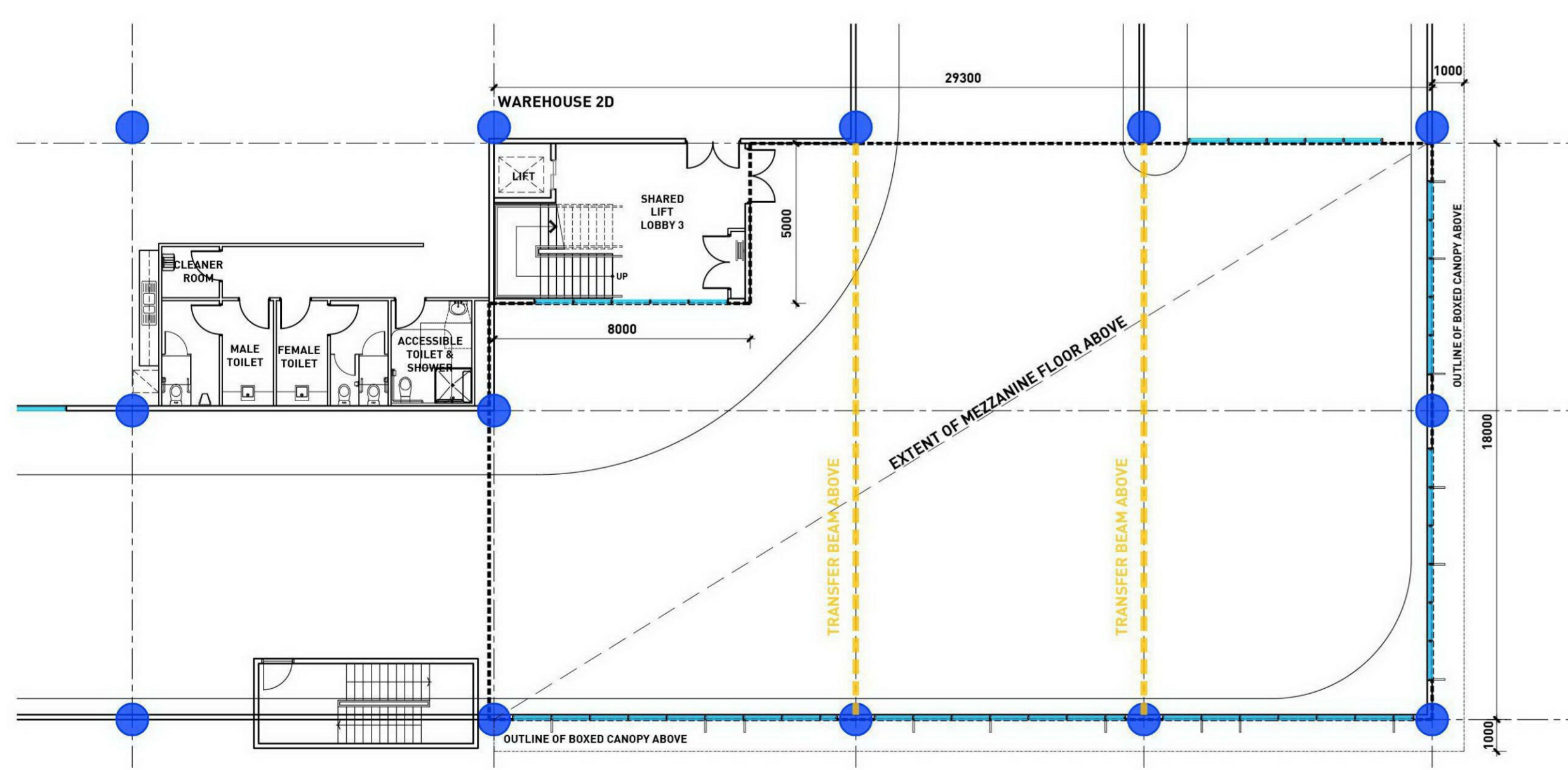
**03 OFFICE 2F & 2E - FIRST FLOOR MEZZANINE PLAN**



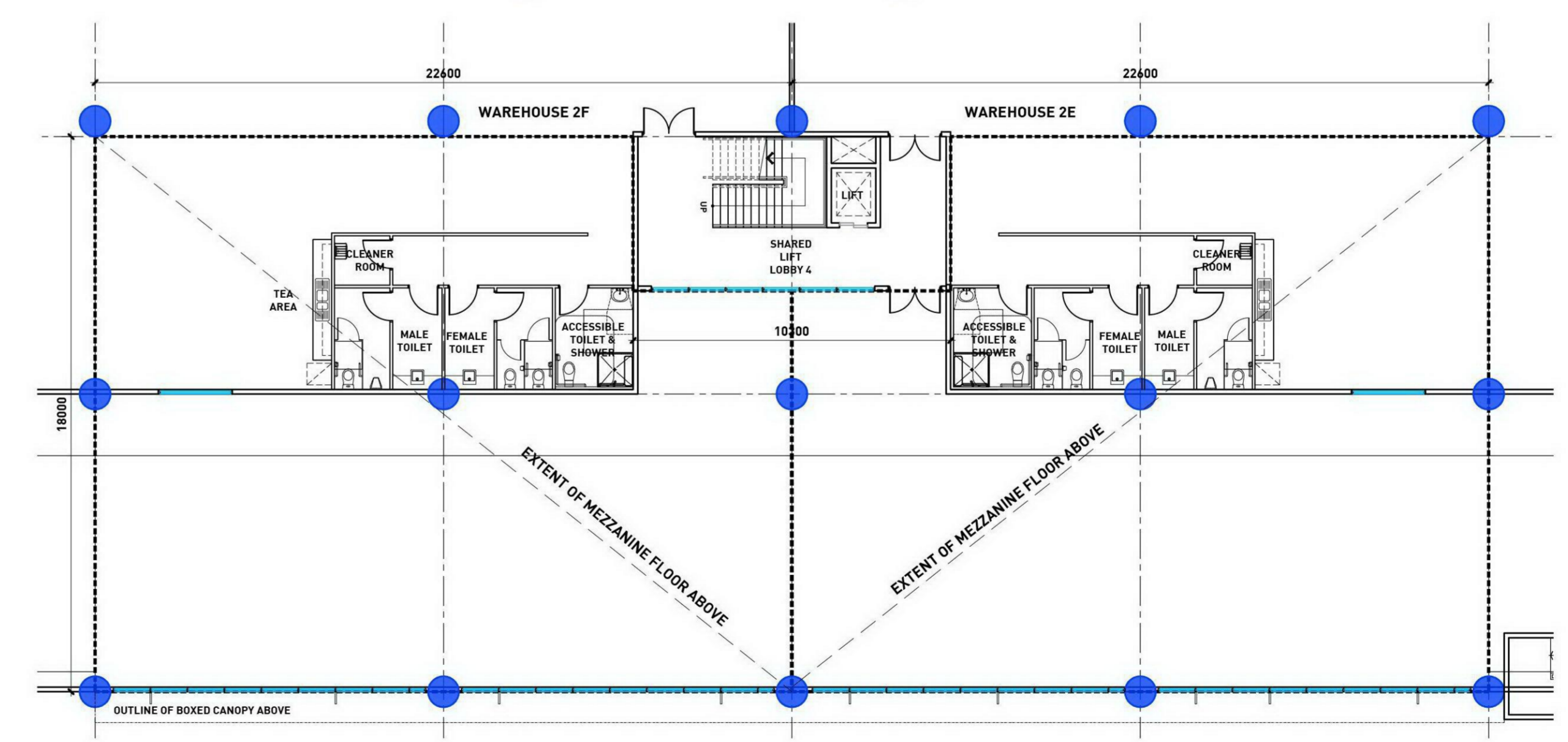
**05 DOCK OFFICE 2D FLOOR PLAN**  
SCALE: 1:100



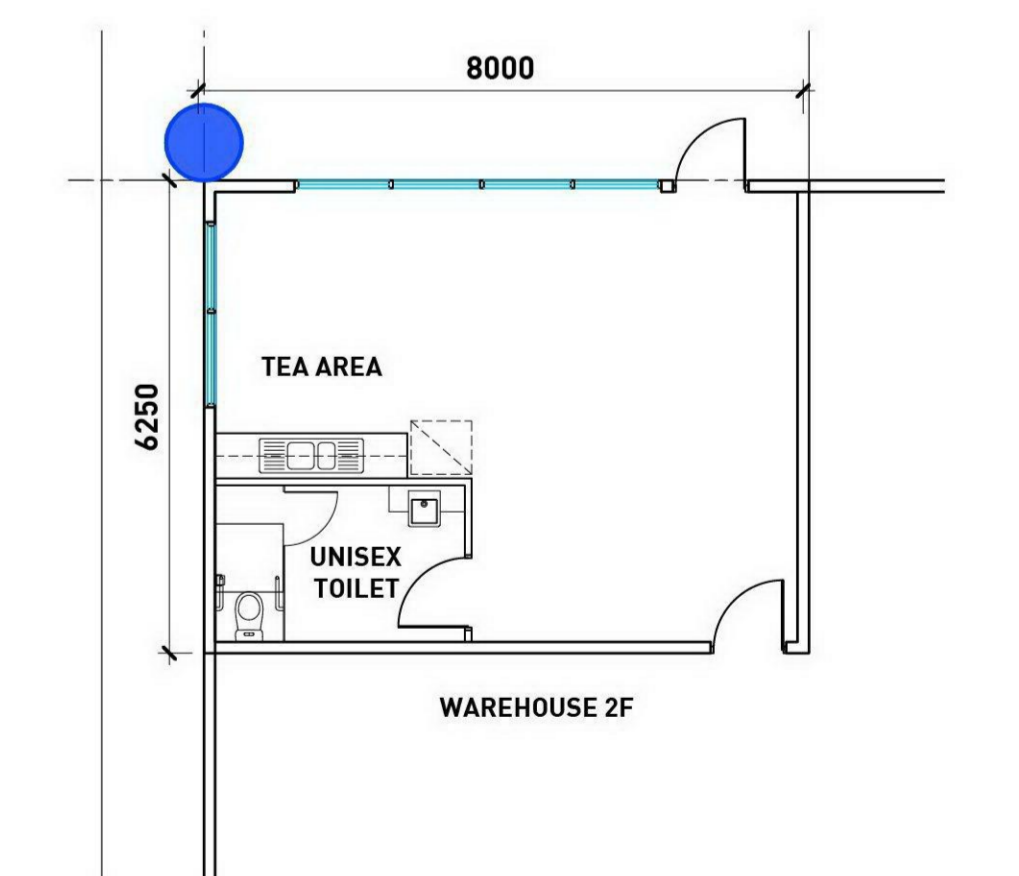
**06 DOCK OFFICE 2E FLOOR PLAN**  
SCALE: 1:100



**02 OFFICE 2D - FIRST FLOOR PLAN**



**04 OFFICE 2F & 2E - FIRST FLOOR PLAN**



**07 DOCK OFFICE 2F FLOOR PLAN**  
SCALE: 1:100

CLIENT:

**dexus**

**NOTE:**

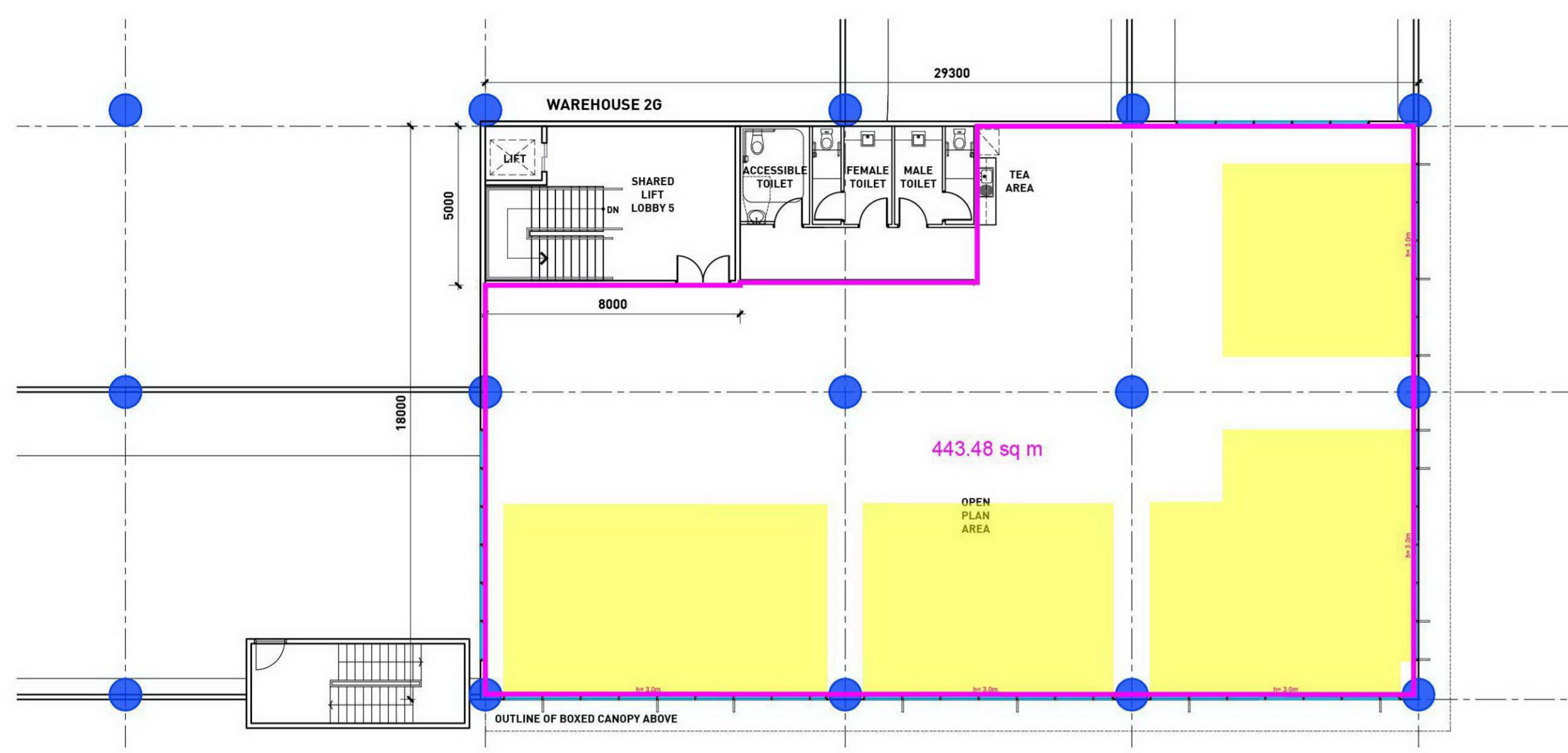
- This concept plan is intended for Development Application purposes only. All setbacks, site coverage, car parking numbers, landscape areas and the like are subject to statutory approval.
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- All existing & proposed features, dimensions, areas and boundaries are approximate only and subject to verification via detailed site survey by licensed surveyor.

**LEGEND**

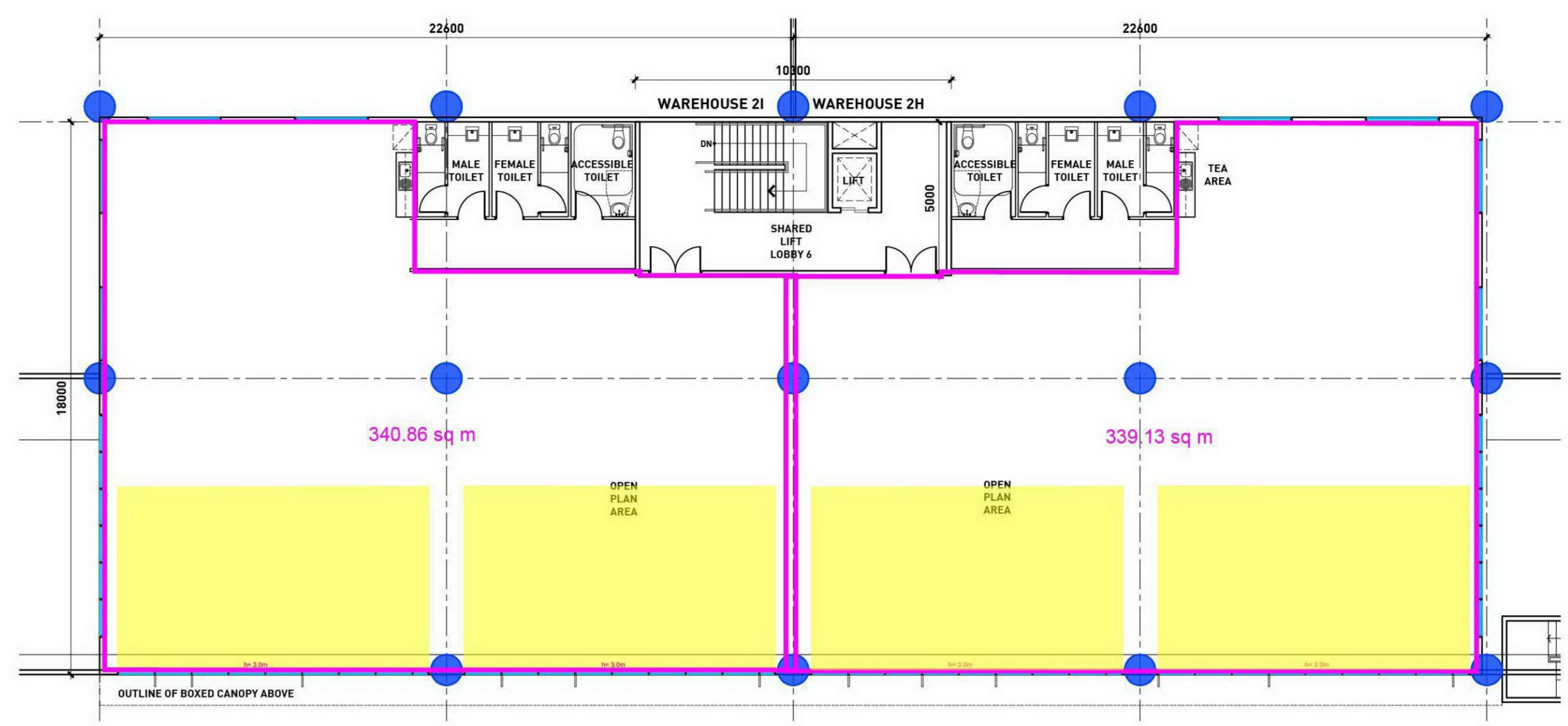
Total Area

Compliant Area

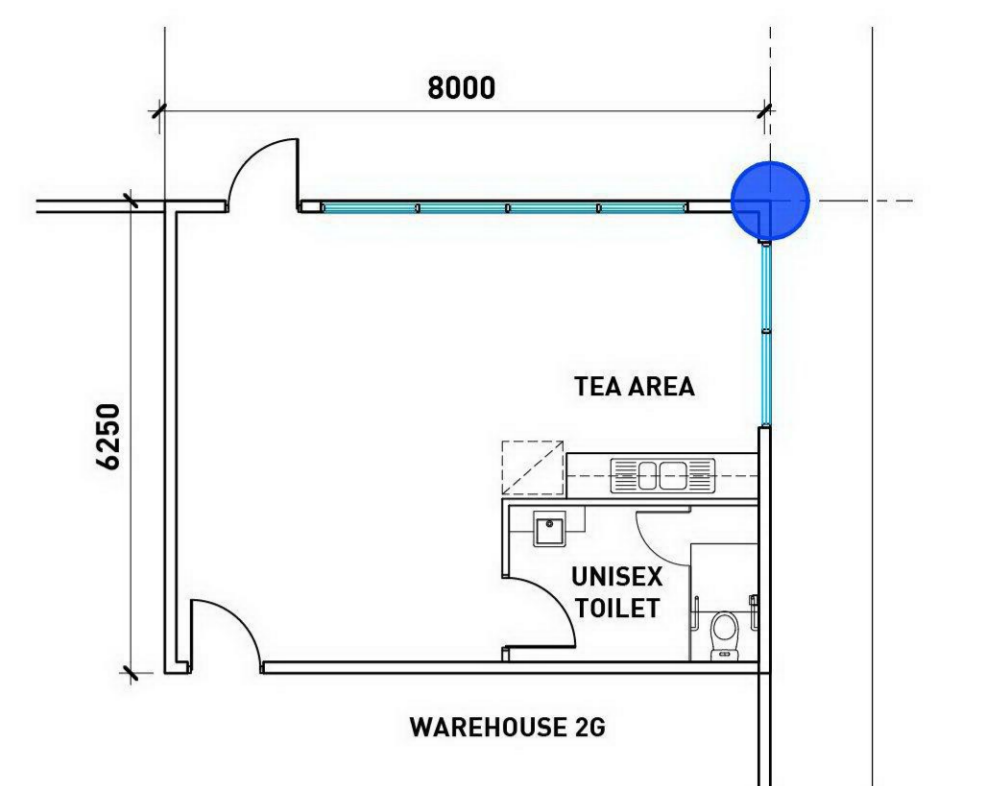
**FOR DEVELOPMENT APPLICATION ONLY**  
SUBJECT TO STATUTORY APPROVAL



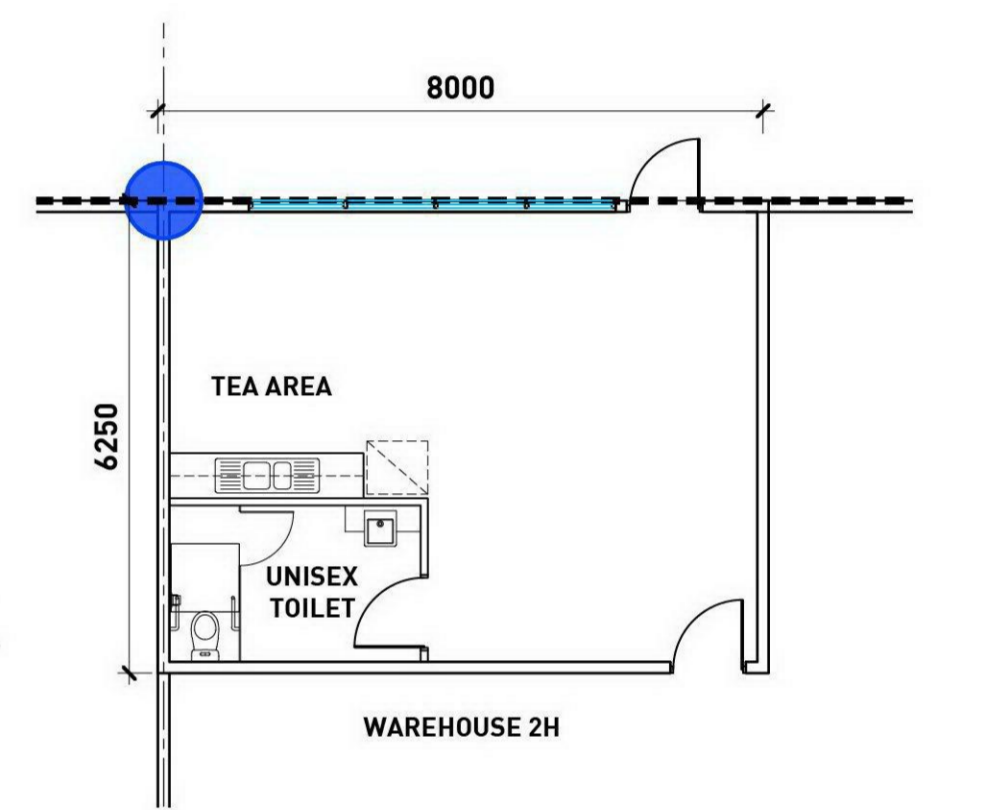
**01 OFFICE 2G - SECOND FLOOR MEZZANINE PLAN**



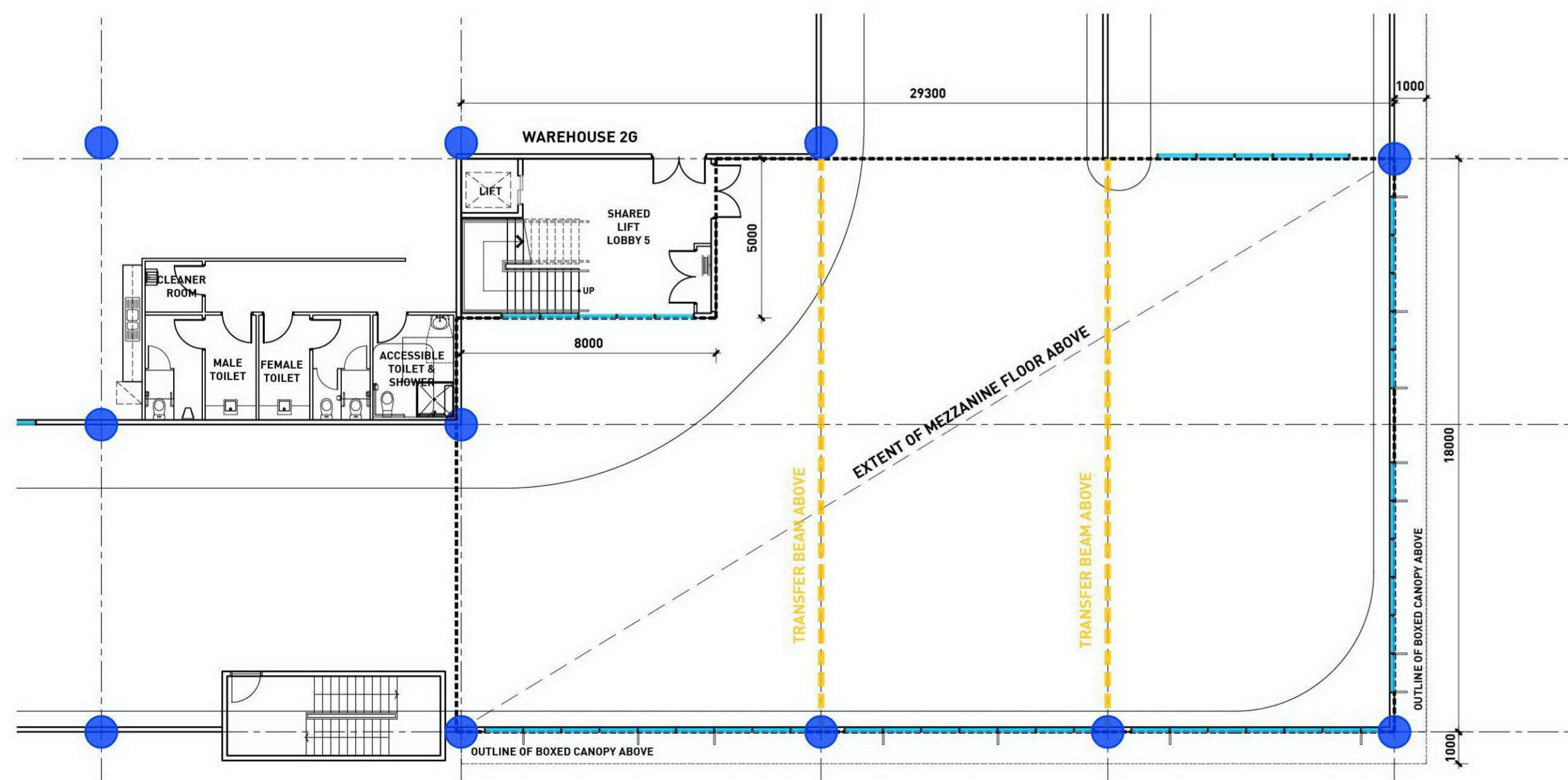
**03 OFFICE 2H & 2I - SECOND FLOOR MEZZANINE PLAN**



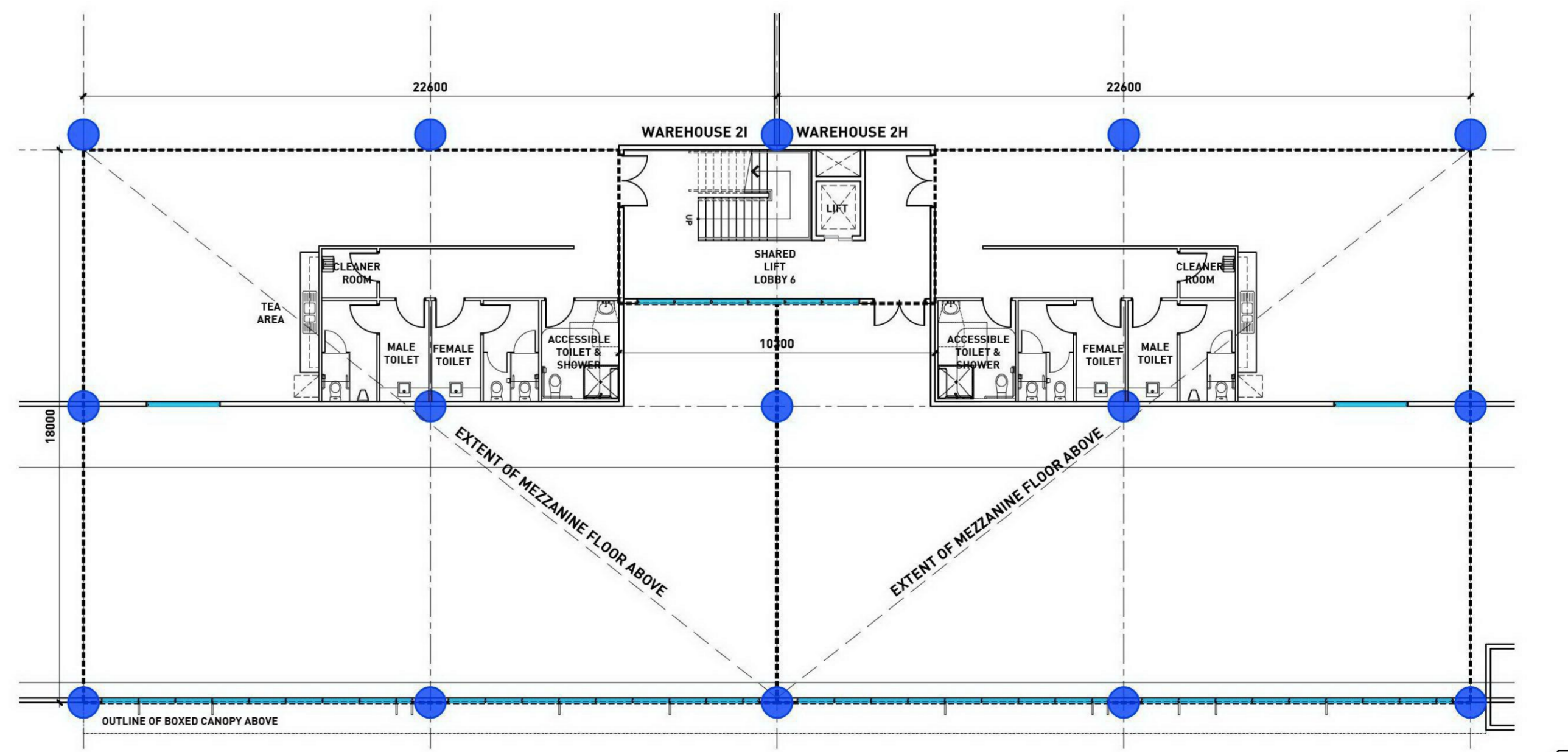
**05 DOCK OFFICE 2G FLOOR PLAN**  
SCALE: 1:100



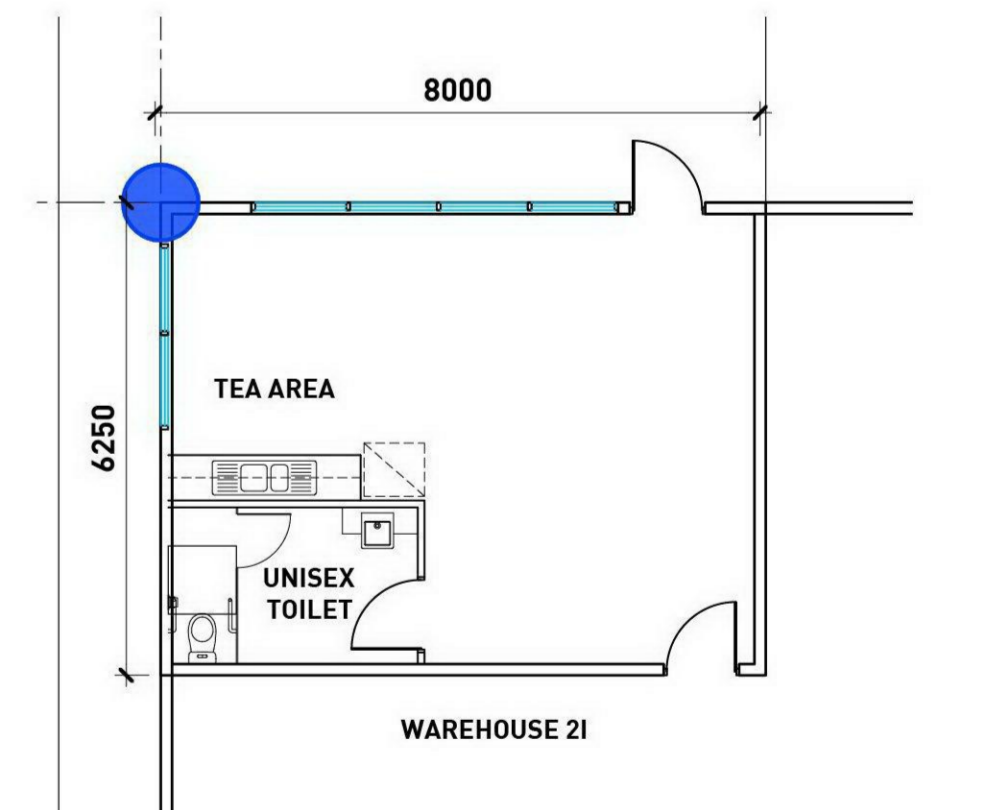
**06 DOCK OFFICE 2H FLOOR PLAN**  
SCALE: 1:100



**02 OFFICE 2G - SECOND FLOOR PLAN**



**04 OFFICE 2H & 2I - SECOND FLOOR PLAN**



**07 DOCK OFFICE 2I FLOOR PLAN**  
SCALE: 1:100

CLIENT:

**dexus**



# **Appendix D**

## **Paints, Adhesives and Sealants**

The following TVOC limits are applicable to all internal applications of all types of paints, adhesives or sealants applied on-site, including both exposed and concealed applications. If exterior grade products are used in an internal application, then these must also meet the requirements.

The following items are excluded from this credit:

- > Glazing film, tapes, and plumbing pipe cements.
- > Products used in car park.
- > Paints, adhesives, and sealants used off-site, for example applied to furniture items in a manufacturing site and later installed in the fit out; and
- > Adhesives and mastics used for temporary formwork and other temporary installations.

Product Type	Maximum TVOC Content (g/litre of ready to use product)
General purpose adhesive and sealants	50
Interior wall and ceiling paints, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealants, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100
Ultra-Low VOC paints	5

Further, carpets used in the project must either be:

- > Certified under a recognised Product Certification Scheme (listed on the GBCA website) or other recognised standards; or
- > Compliant with the Total VOC (TVOC) limits specified in the table below.

Product Type	Maximum TVOC Content (g/litre of ready to use product)
ASTM D5116 – Total VOC limit	0.5mg/m <sup>2</sup> per hour
ASTM D5116 – 4-PC (4 – Phenylcyclohexene)	0.05mg/m <sup>2</sup> per hour
ISO 16000 / EN 13419 – TVOC at three days	0.5mg/m <sup>2</sup> per hour
ISO 10580 / ISO/TC 219 (Document N238) – TVOC at 24 hours	0.5mg/m <sup>2</sup> per hour



# **Appendix E**

## **Engineered Wood Products**

The term "engineered wood products" includes composite wood products and includes raw/ unfinished as well as finished products. Items not covered by these limits include products used in exterior applications, formwork, internal car park applications, re-used products, and raw timber. All emission levels must be established by a NATA or ISO/IEC 17025 registered laboratory as per the testing methodologies in the table above.

Test Protocol	Emission Limit / Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1.0 mg/L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.0 mg/L
AS/NZS 4357.4 – Laminated Veneer Lumber (LVL)	≤1.0 mg/L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1.0 mg/L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1.0 mg/L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1.0 mg/L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/ m <sup>2</sup> hr
ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1mg/m <sup>2</sup> hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1 mg/m <sup>2</sup> hr (at 3 days)
ASTM D6007	≤0.12mg/m <sup>3**</sup>
ASTM E1333	≤0.12mg/m <sup>3***</sup>
EN 717-1 (also known as DIN EN 717-1)	≤0.12 mg/m <sup>3</sup>
EN 717-2 (also known as DIN EN 717-2)	≤3.5 mg/m <sup>2</sup> hr

\*\*The test report must confirm that the conditions of this table comply for the particular wood product type, the final results must be presented in EN 717-1 equivalent (as presented in the table) using the correlation ratio of 0.98.

\*\*\* The results must be presented in EN 717-1 equivalent (as presented in the table), using the correlation ratio of 0.98.



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