Engineering Services Report

67-69 Shore St East, Cleveland

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2024/1488

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Queensland Government

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Revision:	A

PITCH BLACK GROUP

Engineering Services Report

67-69 Shore St East, Cleveland

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As Part of Project:

23191 - 67-69 Shore St East, Cleveland

For Use by Client:

Karote ATF Chippers Trust

Document Revision History

Rev	Description	Date	Author	Reviewed	RPEQ
A	For Approval	02/02/2024	J. Blyth	N. Green	27726

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1 Introduction

Pitch Black Group has been commissioned by Karote ATF Chippers Trust to prepare an Engineering Services Report for the proposed multi-storey residential development at 67-69 Shore St East, Cleveland (the subject site).

This report addresses the proposed roadworks and earthworks and demonstrates conceptually how the development can be serviced by stormwater, water and sewer infrastructure. Refer to report '23191-RPT-CV-0001 – Stormwater Management Plan' for details on how the site will manage stormwater quantity and quality.

Throughout this report, the developable area is referred to as the 'subject site' which is Lot 12 on C14563 & Lot 13 on C14563.

The design been prepared in accordance with the State Planning Policy 2017, Queensland Urban Drainage Manual 2016 and the Toondah Harbour Priority Development Area Development Scheme 2014.

2 Site Details

2.1. Location

The subject site is located at 67-69 Shore St East, Cleveland (Lot 12 on C14563 & Lot 13 on C14563), approximately 30km south-east of Brisbane's CBD and occupies a total area of 2,226m².

The site is bounded by Shore Street East to the north, residential dwellings to the east and west and a park to the south, as shown below in Figure 2-1.

Figure 2-1: Locality Plan

2.2. Topography

The subject site generally falls toward the south, with a level building pad of approximately RL 4.40m on the northern half of the site and the rear boundary falling to a low point of RL 2.11m as can be seen in Figure 2-2.

The northern boundary of the site sits approximately 900mm above the Shore Street East frontage pavement level and there is a poorly defined, shallow table drain in the verge running to the west.

2.3. Existing Use

The existing structures on the development site consist of two single storey residential dwellings, a single storey granny flat and a number of sheds and water tanks as shown below in Figure 2-2. The eastern lot also features a paved driveway area.

Refer to the site survey by Axis Surveys in Appendix B for further details.

Figure 2-2: Aerial Imagery showing 0.25m contours (QLD Globe, 2023)

2.4. Easements

The site is not encumbered by any easements.

2.5. Flooding

The subject site is flagged to be impacted by the Flood and Storm Tide Hazard Overlay under the Redland City Plan 2018, with a 1% AEP flood level of 3.16m AHD in the year 2100 nominated. Refer to '23191-RPT-CV-0001 - Stormwater Management Plan' by Pitch Black Group for further details.

3 Proposed Development

The proposal consists of a Material Change of Use application for a six (6) storey multi-unit development consisting of thirty (30) units and sixty-three (63) car parks on the ground floor. A 3D perspective of the development by RC+ Design is shown below in Figure 3-1.

Vehicular access to the development is proposed to be via a new 6.5m wide driveway crossover on Shore Street East. The section of Shore Street East fronting the proposed development will be upgraded to a 7m wide carriageway and new kerb and channel will be constructed along the southern edge, along with a new 2.5m wide multi-use footpath. Pedestrian access will be provided from Shore St East.

Figure 3-1: 3D Perspective by RC+ Design

Refer to Appendix A for the proposed site layout and elevation plans by RC+ Design.

4 Filling and Excavation

4.1. Earthworks

Earthworks will be required on-site to achieve the proposed levels for the new building and driveway. Minor earthworks are also proposed to the verge along the site frontage to achieve minimum standards for verge grades.

The proposed finished floor level for the ground floor of the new building is 3.65m AHD, which is above the level required for flood immunity (3.16m + 0.3m freeboard).

The site will be predominantly cut, with most of the filling required in the rear (southern) portion of the site. Maximum cut heights are approximately 1.20m and maximum fill heights are approximately 1.40m.

The proposed driveway ramp will require approximately 0.2m to 0.5m of cut to achieve the design levels and provide adequate access to the ground floor carpark. The proposed driveway grades are acceptable for a standard RCC refuse vehicle to access the bin storage area at the top of the driveway and a B99 or B85 vehicle to access the ground floor carpark.

The proposed open space, landscaping and courtyard areas will be at existing ground levels on site with no filling proposed for these areas.

Retaining walls are proposed around most of the proposed building footprint, with a maximum retaining wall height of 1.40m in the southern corner of the site. There are no services (existing or proposed) crossing under the proposed retaining walls and therefore no bridging structures will be required.

All earthworks on site will conform to the requirements of 'AS 3798-2007: Guidelines on earthworks for commercial and residential developments'.

Refer to Appendix C which shows a schematic of the earthworks proposed for the site.

4.2. Erosion and Sediment Control

Erosion and sediment control measures will be required during construction to ensure that surrounding properties and the overland flow path are protected from wind-blown or sediment-laden water leaving the site.

It is recommended that an erosion and sediment control plan is prepared as part of the detailed design drawing package in accordance with International Erosion Control Australia (IECA) standards.

4.3. Acid Sulphate Soils

As the site is below 5m AHD there is a risk of encountering potential acid sulphate soils. It is recommended that geotechnical testing is undertaken and an Acid Sulphate Soil Management Plan prepared if acid sulphate soils are likely to be disturbed during earthworks.

5 Roadworks

Shore St East is a bitumen road with two-way crossfall featuring mountable kerb and channel along the northern side of the pavement only, with the southern side draining directly to the grassed verge. The existing road pavement is approximately 6.3m wide from the kerb invert on the northern side to the edge of bitumen on the southern side. The southern verge is approximately 11.8m wide and falls from the bitumen edge to a shallow grassed table drain which then ramps up approximately 0.5-1.0m in height to the site boundary.

The road pavement along the frontage of the site is proposed to be upgraded to a 7m wide carriageway width with new mountable kerb and channel to be constructed along the southern edge. The existing pavement will be cut back and removed to allow a minimum new pavement width of 1.2m. A 2.5m wide shared concrete footpath will be constructed along the site frontage, set back 1.5m from the kerb invert.

The verge profile is proposed to be altered to match the residential footpath profile shown in RCC standard drawing R-RCC-5. Standard verge grades are proposed to the back of footpath, with non standard verge grades of up to 10% from the back of footpath to the property boundary to avoid cutting the entire verge out and undermining existing services in the area.

A new 6.5m wide concrete driveway crossover is proposed on Shore St East in accordance with RCC standard drawing R-RCC-2.

Refer to Appendix C which shows the conceptual roadworks proposed for the site.

6 Infrastructure

6.1. Stormwater

6.1.1. Existing Stormwater Infrastructure

No formal internal stormwater drainage infrastructure was identified within the proposed development site. It is assumed that all stormwater runoff from the site currently drains either to the council owned park at the south or to the table drain in the verge along Shore St East via sheet flow.

Shore St East has kerb and channel along the northern side draining to a gully pit approximately 75m to the east of the site, while the southern side of the road discharges directly into a shallow grassed table drain that also runs to the west.

A DN525 RCP stormwater pipe is located in the verge immediately opposite the proposed development on the northern side of the carriageway. This drainage network conveys internal flows from the existing unit/townhouse developments on the northern side of Shore St East to the gully pit and then continues under the road into a vegetated open channel to the south. The open channel appears to discharge into the park and then flow overland into the bay.

The existing stormwater drainage infrastructure identified on Council's Red-e-map is shown in Figure 6-1.

Figure 6-1: Existing stormwater infrastructure (Red-e-map 2023)

6.1.2. Lawful Point of Discharge

The proposed lawful point of discharge (LPOD) for the development is the existing 525mm RCP stormwater pipe in the verge on the northern side of Shore St East, directly opposite the development site.

6.1.3. Proposed Infrastructure

The proposed drainage infrastructure for the site will consist primarily of an internal system of grated stormwater pits draining the ground floor carpark and roof of the proposed development. These pits

will connect to a proposed gully pit positioned just to the south-west of the new driveway crossover and then be piped under the road carriageway and into a new 1050mm diameter stormwater manhole built over the existing 525mm diameter pipe.

The internal stormwater system will be sized to convey up to a 1% AEP event via the pit and pipe network. The small landscaped areas within the site footprint will discharge directly to the verge along the front or the park to the rear of the site via sheetflow.

No detention structures are proposed for the developed site based on a capacity analysis of the existing stormwater network. Refer to Stormwater Management Plan Report 23191-RPT-CV-0001 for details on the stormwater modelling and management strategies.

The proposed stormwater drainage infrastructure works are shown in the Concept Services Layout (Ref: 23191-DWG-CV-SK001) in Appendix C.

6.2. Sewerage Reticulation

6.2.1. Existing Sewer Infrastructure

An existing DN150 asbestos cement (AC) sewer is located in the verge along the site frontage. A 1050mm diameter manhole (ID: 43066) is located near the north-western corner of the site with a pit invert level of 1.02m AHD. There are two 100mm uPVC property connections currently servicing the site, as shown in Figure 6-2.

Figure 6-2: Existing Sewer Infrastructure (source: RCC Red-E-Map)

6.2.2. Proposed Sewer Infrastructure

The two existing DN100 uPVC sewer property connections servicing the site are proposed to be capped and removed. A single new DN150 uPVC property connection is proposed to be installed on the existing DN150 sewer main approximately 14.0m from the western property boundary.

The proposed sewer infrastructure works are shown in the Concept Services Layout (Ref: 23191-DWG-CV-SK001) in Appendix C.

6.3. Water Reticulation

6.3.1. Existing Water Infrastructure

The nearest existing water infrastructure to the site is an existing DN100 AC water main located in the verge on the northern side of Shore St East, directly opposite the subject site, as shown in Figure 6-3. The nearest fire hydrant is located in the driveway of 68 Shore St East, directly opposite the site. No existing water connections have been identified from GIS mapping but it is expected that each lot is currently serviced by a small diameter connection (20mm).

Figure 6-3: Existing Water Infrastructure (source: RCC Red-E-Map)

6.3.2. Proposed Water Infrastructure

The existing water connections currently servicing the site are to be capped and removed.

A new water service and associated meter is proposed for the development, with the connection crossing under Shore St East into the front boundary of the site as shown in the Concept Services Layout plan (see Appendix C).

The size of the proposed water property connection will be confirmed by the building hydraulics consultant.

6.4. Electricity, Telecommunications and Gas

Existing overhead electrical, telecommunications and gas are present in the verge of Shore St East. The approximate location of these services is shown in Concept Services Layout plan (see Appendix C).

A Pad Mount Transformer may be required for the development and has been allowed for as part of the design. The finished surface levels for the proposed PMT area have been set at the 1% AEP flood level of 3.16m AHD. The requirement for a PMT will be confirmed by an electrical consultant at the detailed design phase.

7 Conclusions

This Engineering Services Report has assessed the roadworks, earthworks, stormwater and service infrastructure for the proposed multi-unit development at 67-69 Shore St East. Refer to the Stormwater Management Plan (23191-RPT-CV-0001) for details on the stormwater management strategies for the site.

Earthworks and retaining walls will be required on-site to achieve the proposed floor levels required for flood immunity. Erosion and sediment control plans will be required at the detailed design stage to ensure that the development does not release sediment in the surrounding area.

As the site is below 5m AHD there is a risk of encountering acid sulphate soils. It is recommended that geotechnical testing is undertaken and an Acid Sulphate Soil Management Plan prepared if acid sulphate soils are likely to be disturbed during earthworks.

Stormwater, water and sewer infrastructure is located in close proximity to the site and is not expected to present any significant issues in achieving connections to service the development.

The developer or electrical consultant will be required to assess the development connection requirements for electricity, telecommunications and gas infrastructure.

This report has demonstrated that the proposed development proposal provides an acceptable solution for all engineering services and has been designed to comply with the *Toondah Harbour Priority Development Area Development Scheme.*

8 References

Before You Dig Australia - www.byda.com.au

Redland City Council – Red-e-map < https://redlandcity.maps.arcgis.com/apps/webappviewer/index.html?id=b3e7c450b99c4aa281ce24a9c747728f>

Economic Development Queensland, Toondah Harbour Priority Development Area Development Scheme, May 2014.

Economic Development Queensland, Engineering Standards – PDA Guidelines No.13, September 2017.

Economic Development Queensland, Protection from Flood and Storm Tide Indundation – PDA Guidelines No.15, May 2015.

QLD Government - 'Queensland Acid Sulphate Soil Technical Manual – Soil Management Guidelines v5' (2023)

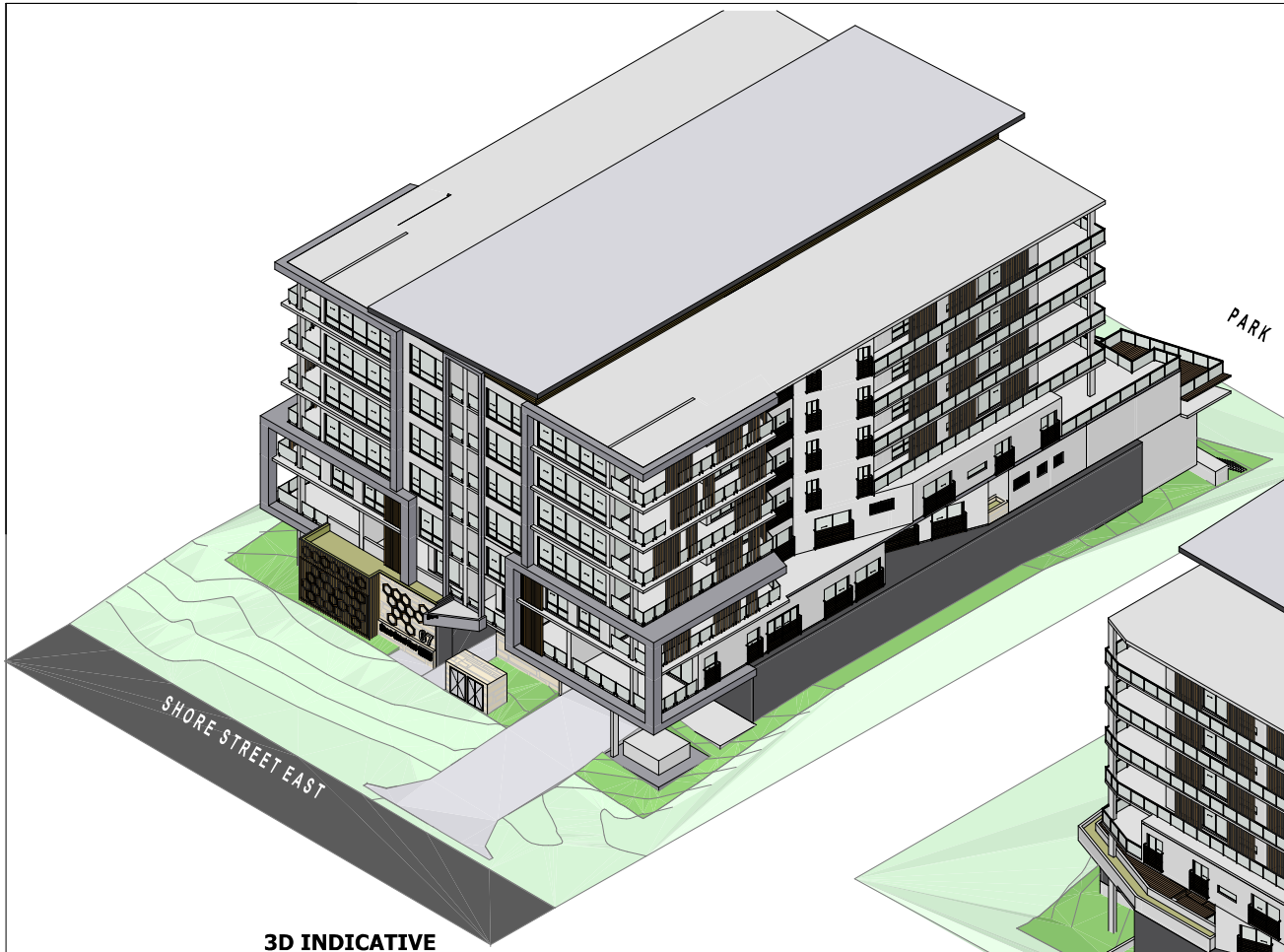
AS 3798-2007: Guidelines on earthworks for commercial and residential developments

Institute of Public Works Engineering Australasia, Queensland Division (2016), Queensland Urban Drainage Manual Fourth Edition 2016

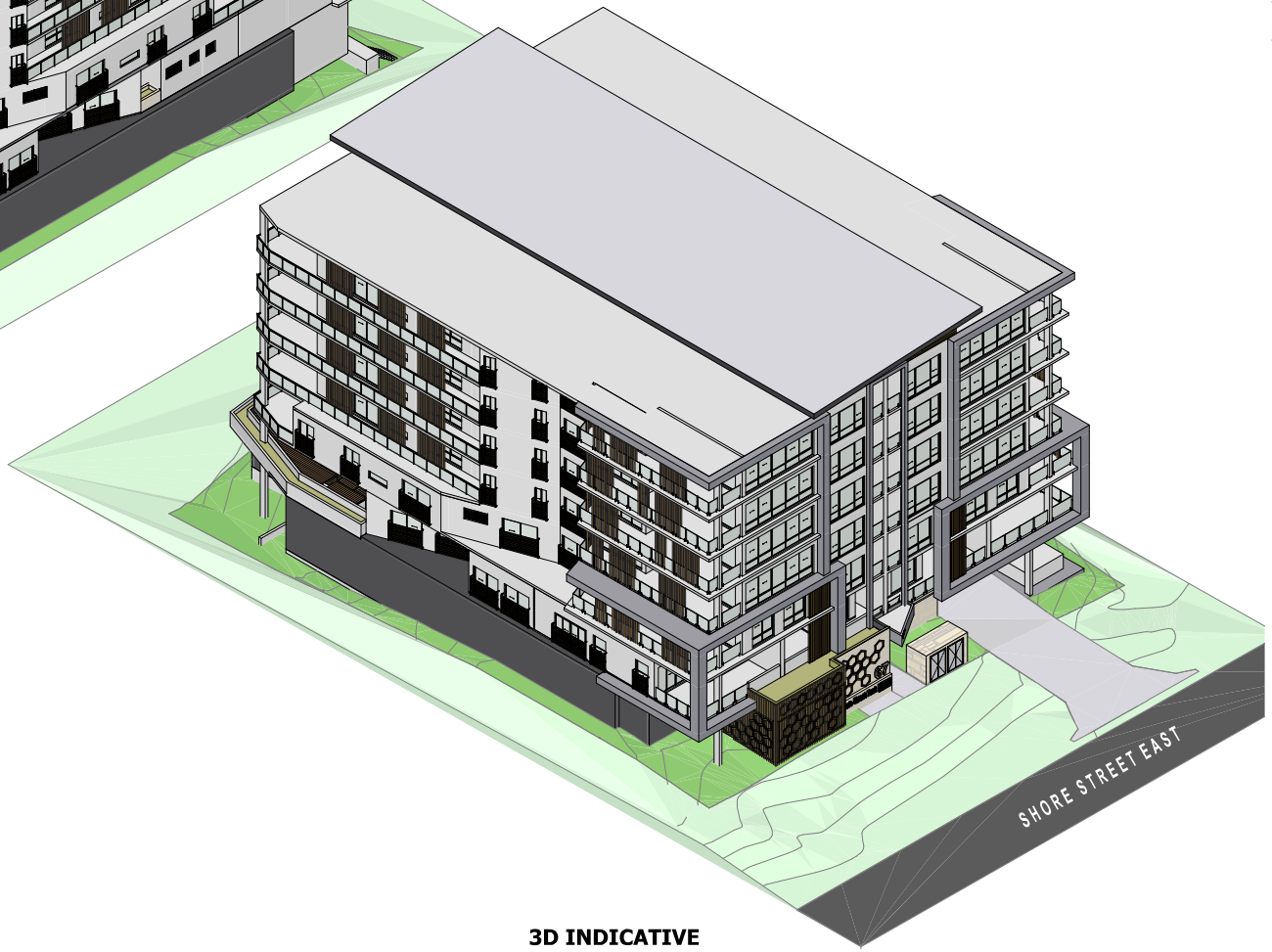
Axis Survey Solutions, Contour and Feature Survey of 67-69 Shore St East, Cleveland. Drawing Number 2200896-X464541 Revision A Dated: 29/03/2022

Appendix A Architectural Plans

SIDE BOUNDARY SETBACK :
1st storey - 1.5m setback
2nd storey – 2m setback
3rd storey – 3m setback
4th to 6th storey – 3m setback



3D INDICATIVE



3D INDICATIVE

PRELIMINARY FOR DISCUSSION - ISSUE C3 (23/Jan/2024)

RC+ Design
BSA License Number 1212835
Email info@rcplusdesign.com.au
Phone 0421197117

CLIENT
TBC

LOCATION
LOT 12 #67 SHORE STREET EAST, CLEVELAND,QLD

DRAWING NAME
3D INDICATIVE

DESIGNER

ISSUE			
C3	28/JAN/2024	Preliminary Issue	CH
C2	23/JAN/2024	Preliminary Issue	VT
B1	11/DEC/2023	Preliminary Issue	VT

Refer to signed contract documents for final selections and inclusions

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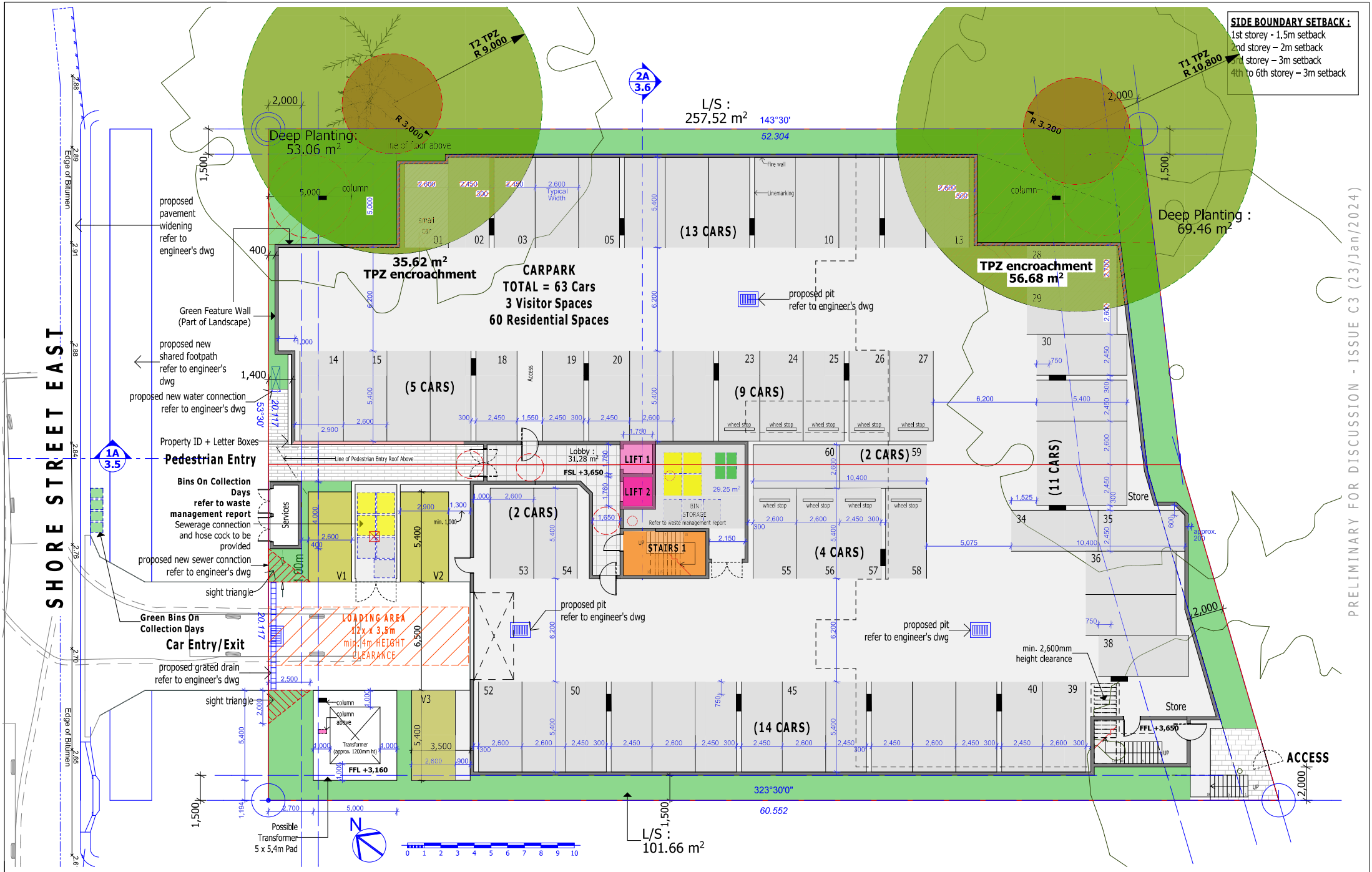

RC+ Design BSA License Number 1212835 Email info@rcplusdesign.com.au Phone 0421197117	CLIENT TBC LOCATION LOT 12 #67 SHORE STREET EAST, CLEVELAND,QLD	DRAWING NAME GROUND FLOOR DESIGNER	ISSUE	NORTH	SCALE 1:200 @A3 PAPER	JOB NUMBER	DRAWING 2.1	REVISION

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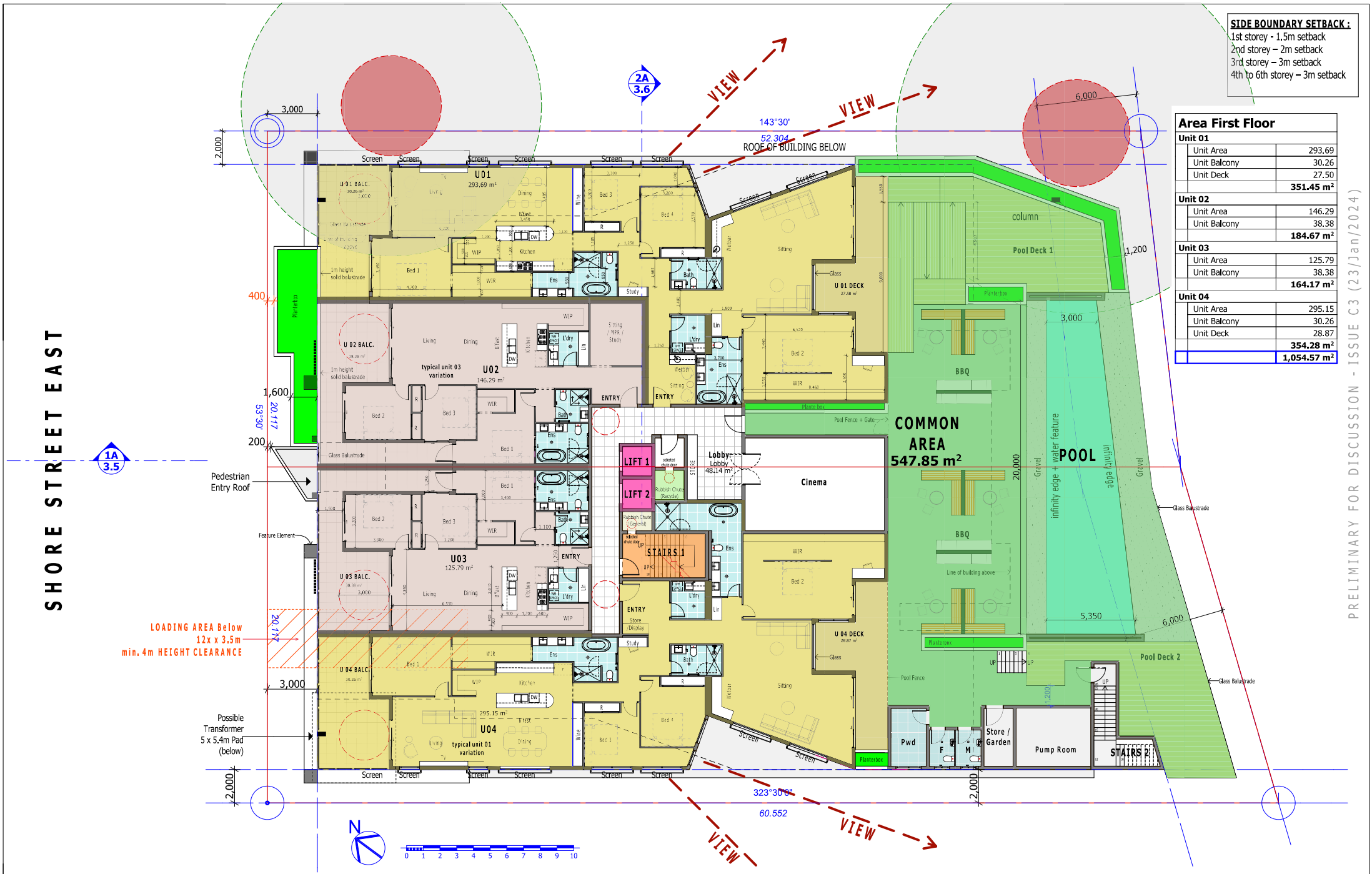

RC+ Design	BSA License Number 1212835 Email info@rcplusdesign.com.au Phone 0421197117	CLIENT TBC LOCATION LOT 12 #67 SHORE STREET EAST, CLEVELAND,QLD	DRAWING NAME FIRST FLOOR DESIGNER

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B1	11/DEC/2023	Preliminary Issue	VT

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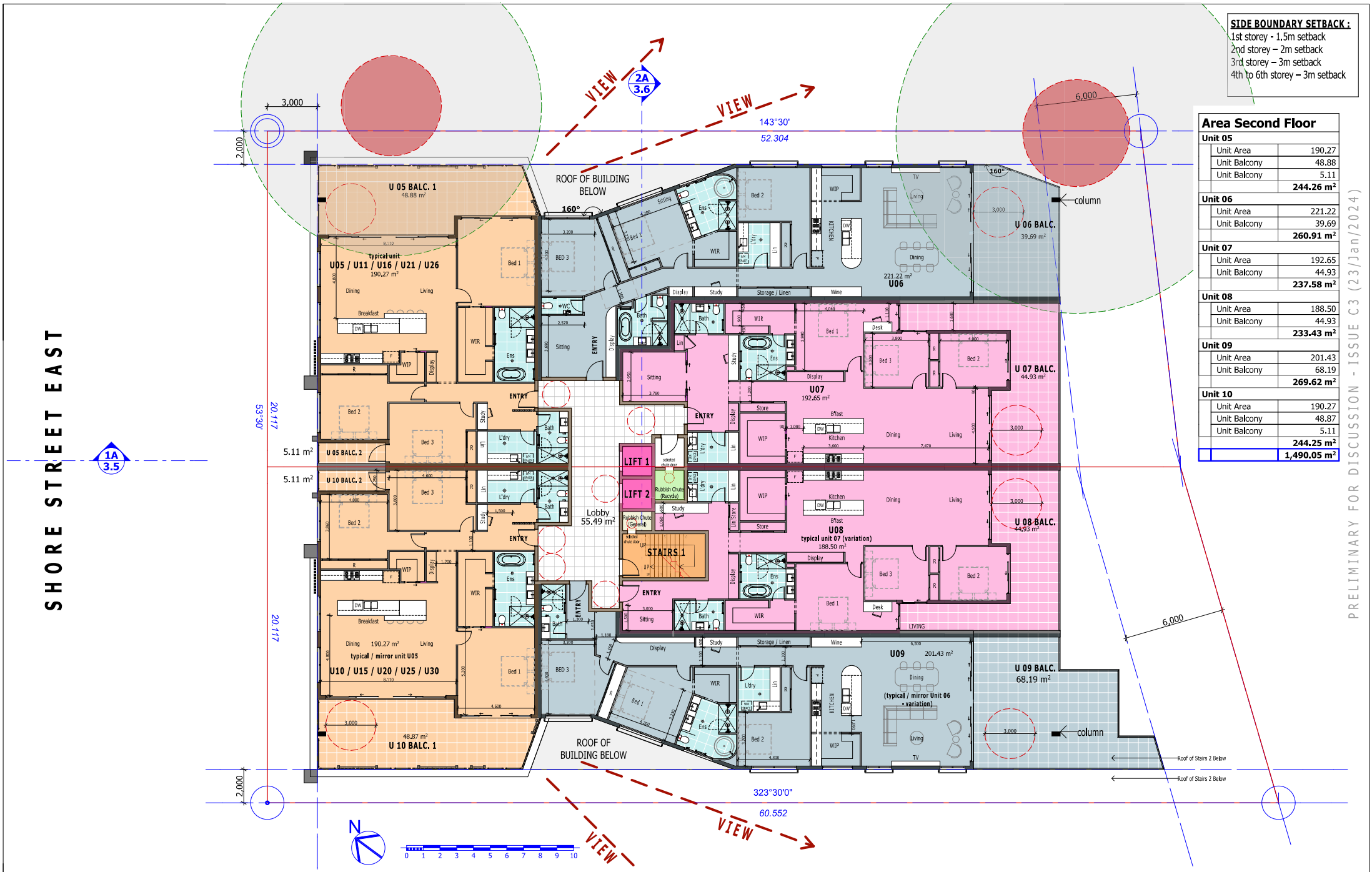

SIDE BOUNDARY SETBACK :
1st storey - 1.5m setback
2nd storey – 2m setback
3rd storey – 3m setback
4th to 6th storey – 3m setback

Area Second Floor

Unit 05		
	Unit Area	190.27
	Unit Balcony	48.88
	Unit Balcony	5.11
		244.26 m²
Unit 06		
	Unit Area	221.22
	Unit Balcony	39.69
		260.91 m²
Unit 07		
	Unit Area	192.65
	Unit Balcony	44.93
		237.58 m²
Unit 08		
	Unit Area	188.50
	Unit Balcony	44.93
		233.43 m²
Unit 09		
	Unit Area	201.43
	Unit Balcony	68.19
		269.62 m²
Unit 10		
	Unit Area	190.27
	Unit Balcony	48.87
	Unit Balcony	5.11
		244.25 m²
		1,490.05 m²

PRELIMINARY FOR DISCUSSION - ISSUE C3 (23/Jan/2024)

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LOCATION
LOT 12 #67 SHORE STREET EAST, CLEVELAND,QLD

DRAWING NAME
SECOND FLOOR

DESIGNER

ISSUE

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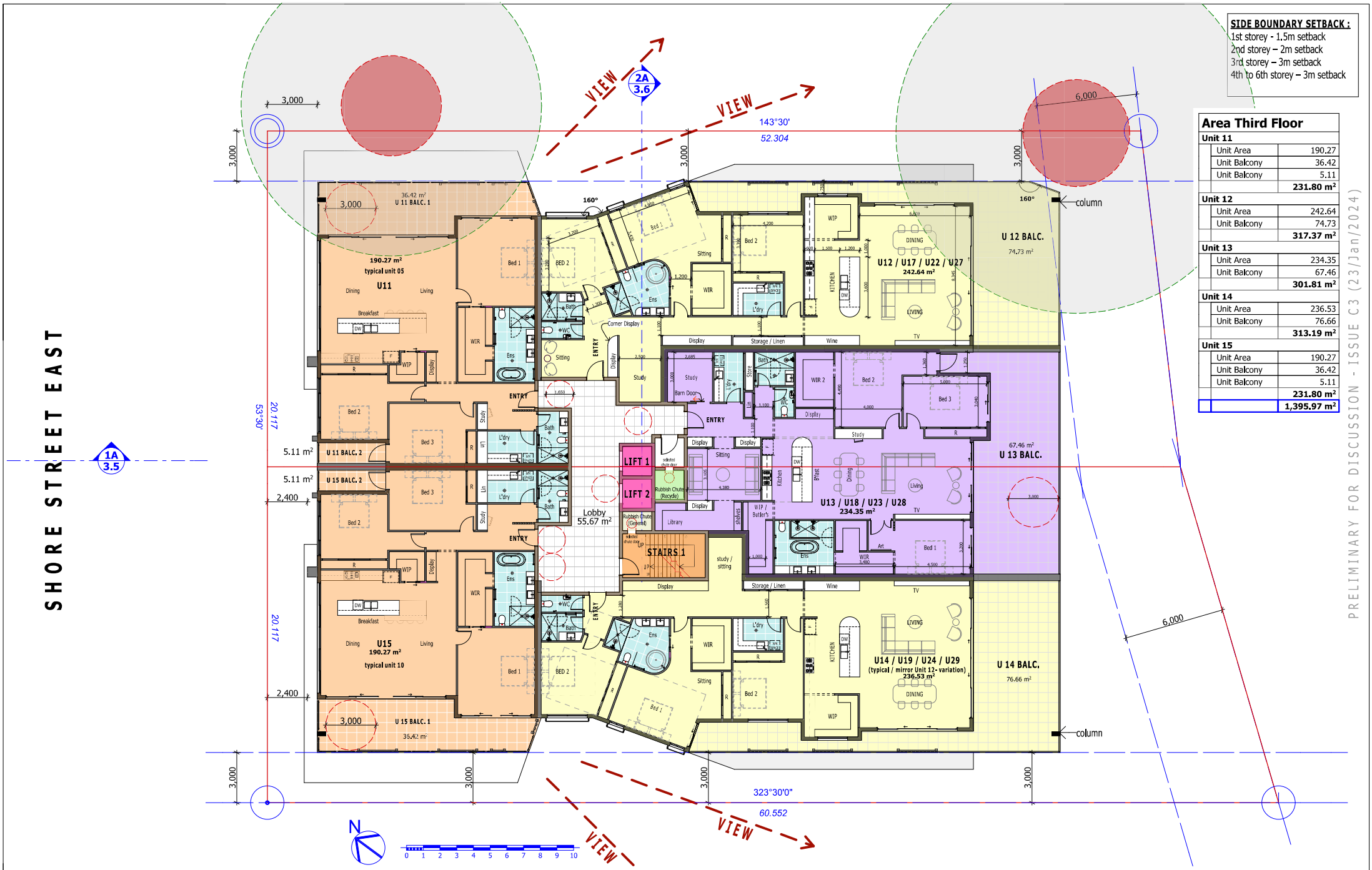

SIDE BOUNDARY SETBACK :
1st storey - 1.5m setback
2nd storey – 2m setback
3rd storey – 3m setback
4th to 6th storey – 3m setback

Area Third Floor

Unit 11		
	Unit Area	190.27
	Unit Balcony	36.42
	Unit Balcony	5.11
		231.80 m²
Unit 12		
	Unit Area	242.64
	Unit Balcony	74.73
		317.37 m²
Unit 13		
	Unit Area	234.35
	Unit Balcony	67.46
		301.81 m²
Unit 14		
	Unit Area	236.53
	Unit Balcony	76.66
		313.19 m²
Unit 15		
	Unit Area	190.27
	Unit Balcony	36.42
	Unit Balcony	5.11
		231.80 m²
		1,395.97 m²

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LOCATION
LOT 12 #67 SHORE STREET EAST, CLEVELAND,QLD

DRAWING NAME
THIRD FLOOR

DESIGNER

ISSUE

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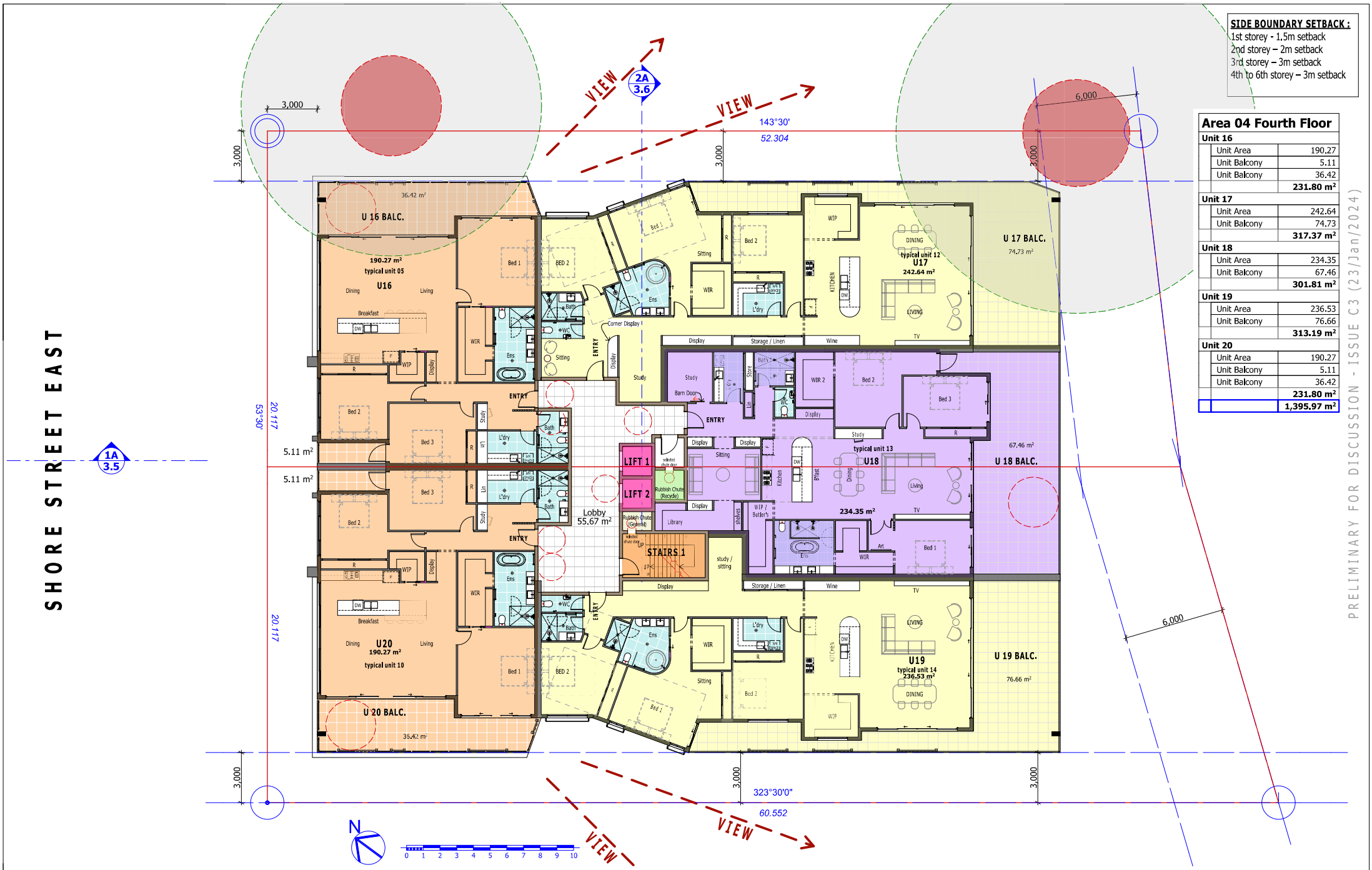

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LOCATION
LOT 12 #67 SHORE STREET EAST, CLEVELAND,QLD

DRAWING NAME
FOURTH FLOOR

DESIGNER

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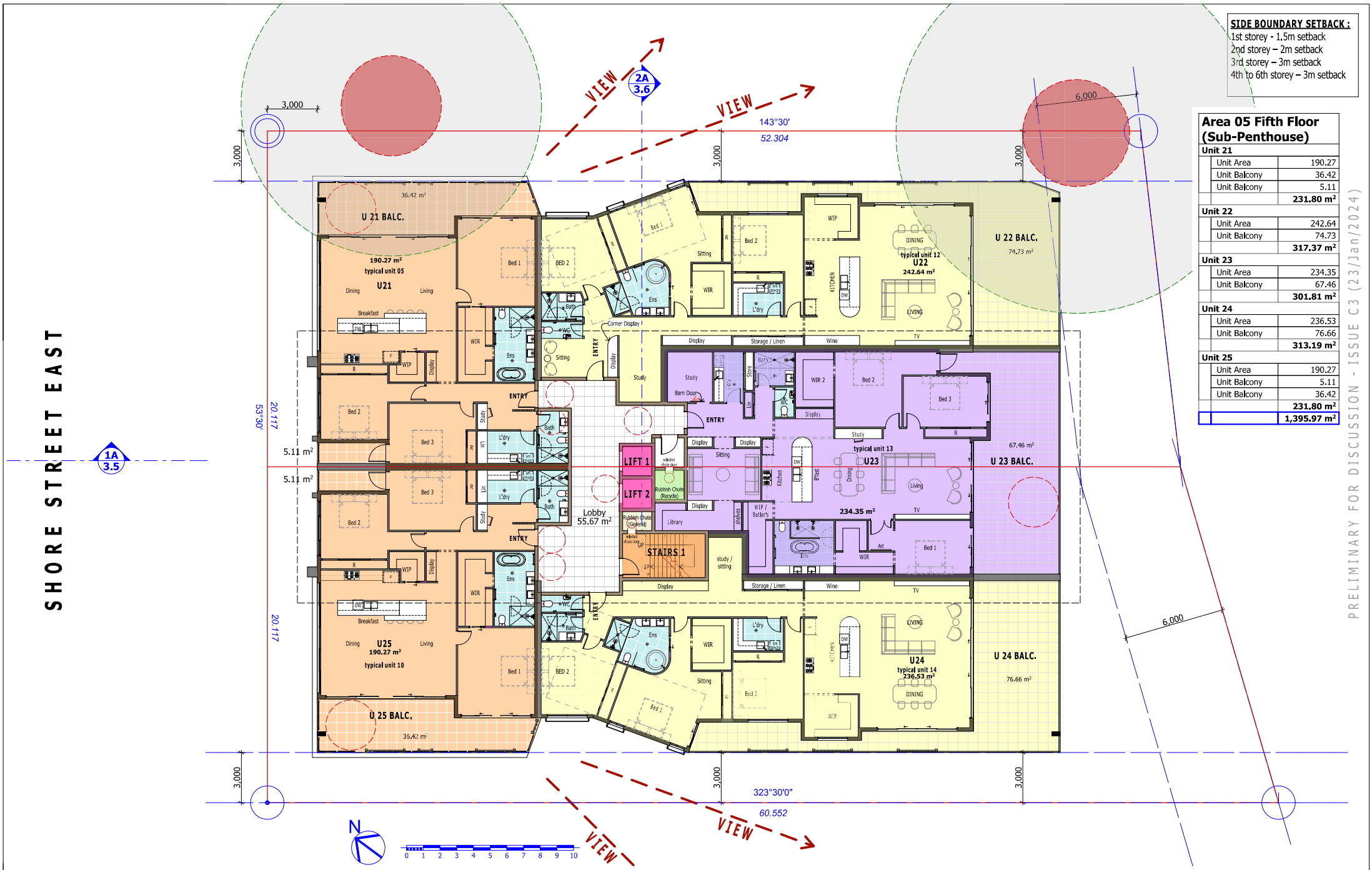

SIDE BOUNDARY SETBACK :
1st storey - 1.5m setback
2nd storey – 2m setback
3rd storey – 3m setback
4th to 6th storey – 3m setback

Area 05 Fifth Floor (Sub-Penthouse)

Unit 21		
	Unit Area	190.27
	Unit Balcony	36.42
	Unit Balcony	5.11
		231.80 m²
Unit 22		
	Unit Area	242.64
	Unit Balcony	74.73
		317.37 m²
Unit 23		
	Unit Area	234.35
	Unit Balcony	67.46
		301.81 m²
Unit 24		
	Unit Area	236.53
	Unit Balcony	76.66
		313.19 m²
Unit 25		
	Unit Area	190.27
	Unit Balcony	5.11
	Unit Balcony	36.42
		231.80 m²
		1,395.97 m²

PRELIMINARY FOR DISCUSSION - ISSUE C3 (23/Jan/2024)

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LOCATION
LOT 12 #67 SHORE STREET EAST, CLEVELAND,QLD

DRAWING NAME
FIFTH FLOOR (Sub-Penthouse)

DESIGNER

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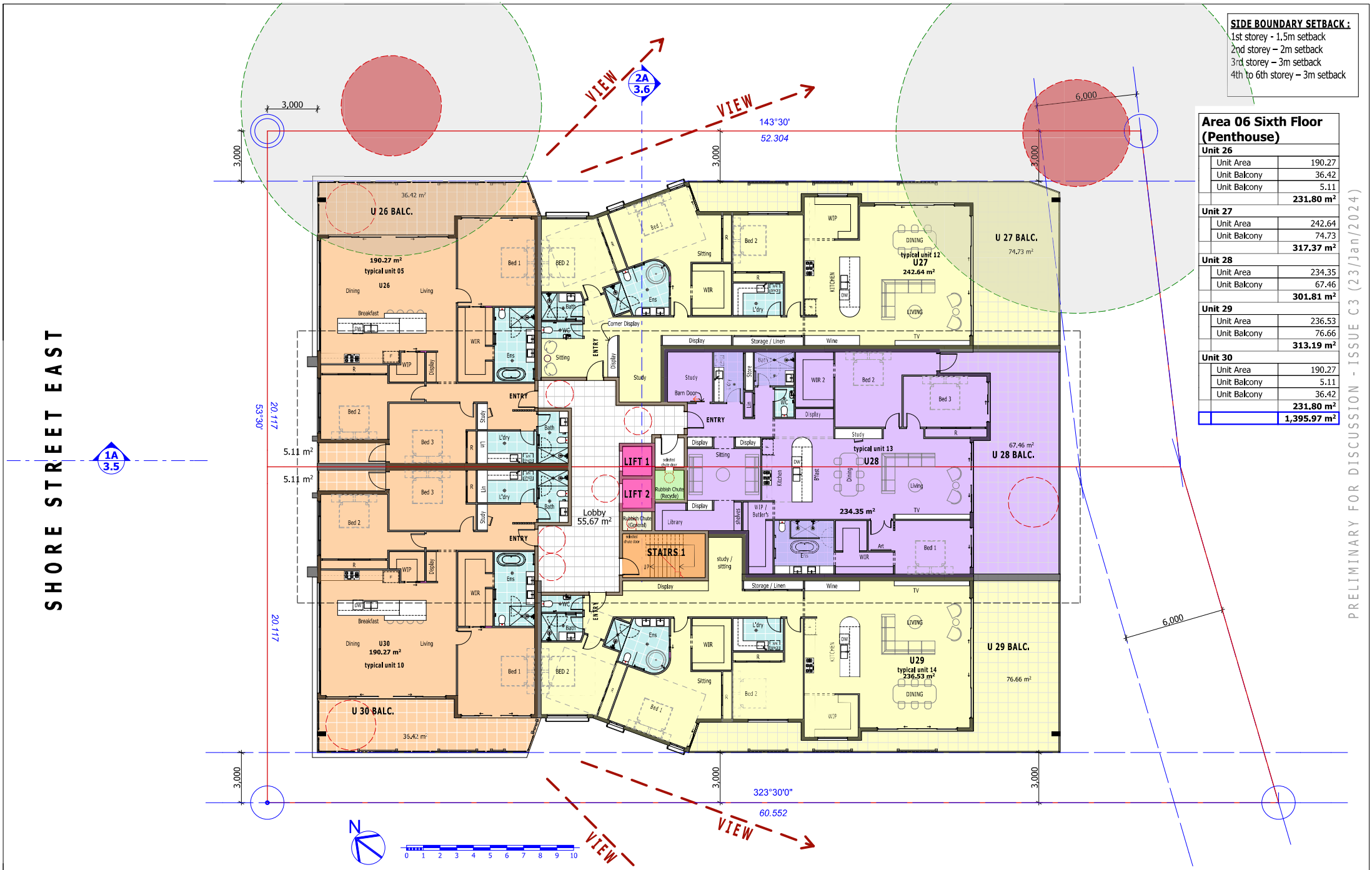

SIDE BOUNDARY SETBACK :
1st storey - 1.5m setback
2nd storey – 2m setback
3rd storey – 3m setback
4th to 6th storey – 3m setback

Area 06 Sixth Floor (Penthouse)

Unit 26		
	Unit Area	190.27
	Unit Balcony	36.42
	Unit Balcony	5.11
		231.80 m²
Unit 27		
	Unit Area	242.64
	Unit Balcony	74.73
		317.37 m²
Unit 28		
	Unit Area	234.35
	Unit Balcony	67.46
		301.81 m²
Unit 29		
	Unit Area	236.53
	Unit Balcony	76.66
		313.19 m²
Unit 30		
	Unit Area	190.27
	Unit Balcony	5.11
	Unit Balcony	36.42
		231.80 m²
		1,395.97 m²

PRELIMINARY FOR DISCUSSION - ISSUE C3 (23/Jan/2024)

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LOCATION
LOT 12 #67 SHORE STREET EAST, CLEVELAND,QLD

DRAWING NAME
SIXTH FLOOR (Penthouse)

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JOB NUMBER	DRAWING	REVISION
	2.7	C3

E:\RC+ARC=LOT 12_67 SHORE ST EAST, CLEVELAND\DESIGN 2_ARCH_LOT 12 #67 SHORE ST EAST, CLEVELAND_ISSUE C3_Facade Oct f_v20240123_ch20240126.pln | 29/01/2024 | 22:43

Appendix B Survey Plan

SURVEY LOCATION

SEE NOTE The red dashed lines on this Plan represent an approximation of the boundary positions for this site and may not be located in its true position in relation to the Levels and Features shown here on. Additional Survey work is required to position the boundary and the Features in their correct relation to each other. Please contact Axis Surveys for additional advice before relying on the boundary position on this Plan for design purposes.

SETOUT EXTRA FEES ALERT (Designer/Builder Etc.)

This Contour and Feature Survey as prepared by Axis Surveys does not address the location of boundaries. Because of the age of the subject plan / and / or missing boundary pegs, Axis Surveys will require additional fees for extra control work to enable us to setout any proposed building work. Please contact this office for further advice.

BOUNDARY MARKS

NOTE Unless otherwise stated no boundary marks have been located, and those that have, have not been checked and may not be correct

Sewerage Note

NOTE Sewer manhole/s not located must be found on site prior to construction

Contour & Feature Survey ©

AXIS SURVEYS

Unit 5/23 Overlord Place, ACACIA RIDGE, Qld, 4110
Ph (07) 3363 8100 www.axissurveys.com.au

LOT 12 - 13 **on**	C14563
#67-69 Shore Street East	
Suburb	Cleveland
Local Auth	Redland City Council
Area	As Shown

Client:

Mayer Hou c/o
RC+ DESIGN

Order No:

NOTES TO BE READ BEFORE USING THIS PLAN

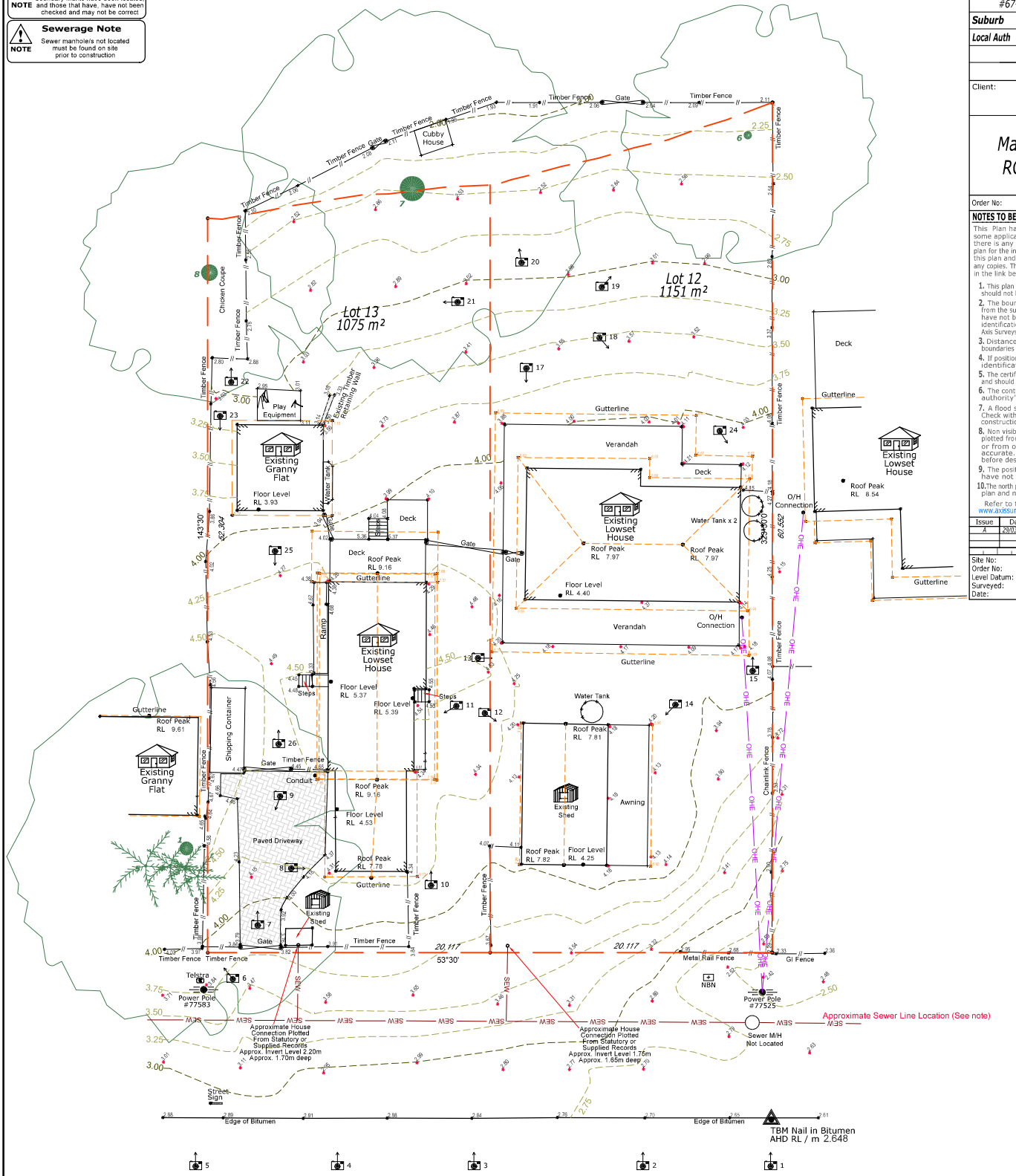
This Plan has limitations regarding its use for some applications. Please contact this office if there is any doubt about the suitability of this plan for the intended use. These notes form part of this plan and they must remain with the plan or any copies. The limitations of this plan are detailed in the link below, with the main ones being:-

1. This plan has been prepared for our client & should not be used by others without approval.
2. The boundaries shown have been sourced from the subject survey plan or as noted, and have not been checked, unless a boundary identification survey has been completed by Axis Surveys.
3. Distances from features to the shown boundaries should not be used or relied upon.
4. If positional accuracy is critical a boundary identification survey may be required.
5. The certificate of title has not been searched and should be checked for any encumbrances.
6. The contours may not represent the local authority's definition of "Ground Level"
7. A flood search has not been carried out. Check with local council for min. and max. construction heights.
8. Non visible services (if shown), have been plotted from the relevant authority's records or from other sources and may not be accurate. Services should be exposed before design or construction commences.
9. The position of any subsurface structures have not been investigated.
10. The north point has been taken from the survey plan and may not be suitable for all uses.

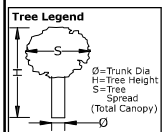
Refer to this link for more information
www.axissurveys.com.au/alertsanddisclaimers/

Issue	Date	Amendment	By
A	25/03/2022	Original Issue	GEO1

Site No:	2200896	Scale:	1:200
Order No:	X464541		
Level Datum:	AHD	PAGE	
Surveyed:	LD	1 OF 1	
Date:	25/03/2022		



Tree Legend



TREE SCHEDULE

No.	Name	T. Ø'	Spr 'Ø'	'H'
1	TREE	1.00 m	25.0 m	20.0 m
2	PALM	0.25 m	4.0 m	15.0 m
3	PALM	0.25 m	4.0 m	13.0 m
4	PALM	0.25 m	4.0 m	13.0 m
5	PALM	0.25 m	6.0 m	13.0 m
6	TREE	0.60 m	18.0 m	8.0 m
7	TREE	1.80 m	25.0 m	14.0 m
8	TREE	1.20 m	18.0 m	18.0 m