

ALL WRITTEN DIMENSIONS TO BE TAKEN IN

ALL REINFORCED CONCRETE, SLABS,

DETAIL AND UNDER HIS SUPERVISION.

FOUNDATIONS, COLUMN DETAILS, BEAMS,

STAIRS, STRUCTURAL STEEL WORK AND

RETAINING WALLS ARE TO BE BUILT STRICTLY IN

ACCORDANCE WITH PROFESSIONAL ENGINEERS

PREFERANCE TO SCALING.

DISCREPANCIES ON SITE.

BE PERMITTED.

NO BACKFILLING OF OVER EXCAVATED AREAS WILL

ALL EARTHWORKS TO BE CONTAINED WITHIN SITE

BOUNDARIES AND WITHIN 1000 OF ANY BOUNDARY.

THE ATTENTION OF THE OWNER IS DRAWN TO THE FACT THAT CHANGES TO THE PLAN AND/OR

GLAZING TO COMPLY WITH PART N OF SANS 10400

SPECIFICATION AFTER OFFICIAL APPROVAL IS

LIKELY TO INVALIDATE THAT APPROVAL.

52.2

652.3 402.1 472.3

OPEN DECK

TOTAL

30 Bridgeview Road, 30 Morningview, Morningside, Durban, 4001 Cell, 0794612555

ALL WASTE PIPES AND DRAINS TO BE ACCESSIBLE INSPECTION EYES (I.E.'S) TO BE PROVIDED AT ALL

ALL I.E.'S MUST HAVE MARKED COVERS AT GROUND

CLEANING EYES (C.E.'S) TO BE PROVIDED AT ALL BENDS AND JUNCTIONS OF WASTE PIPES. WASTE TO BE FITTED WITH 64mm RESEAL TRAPS.

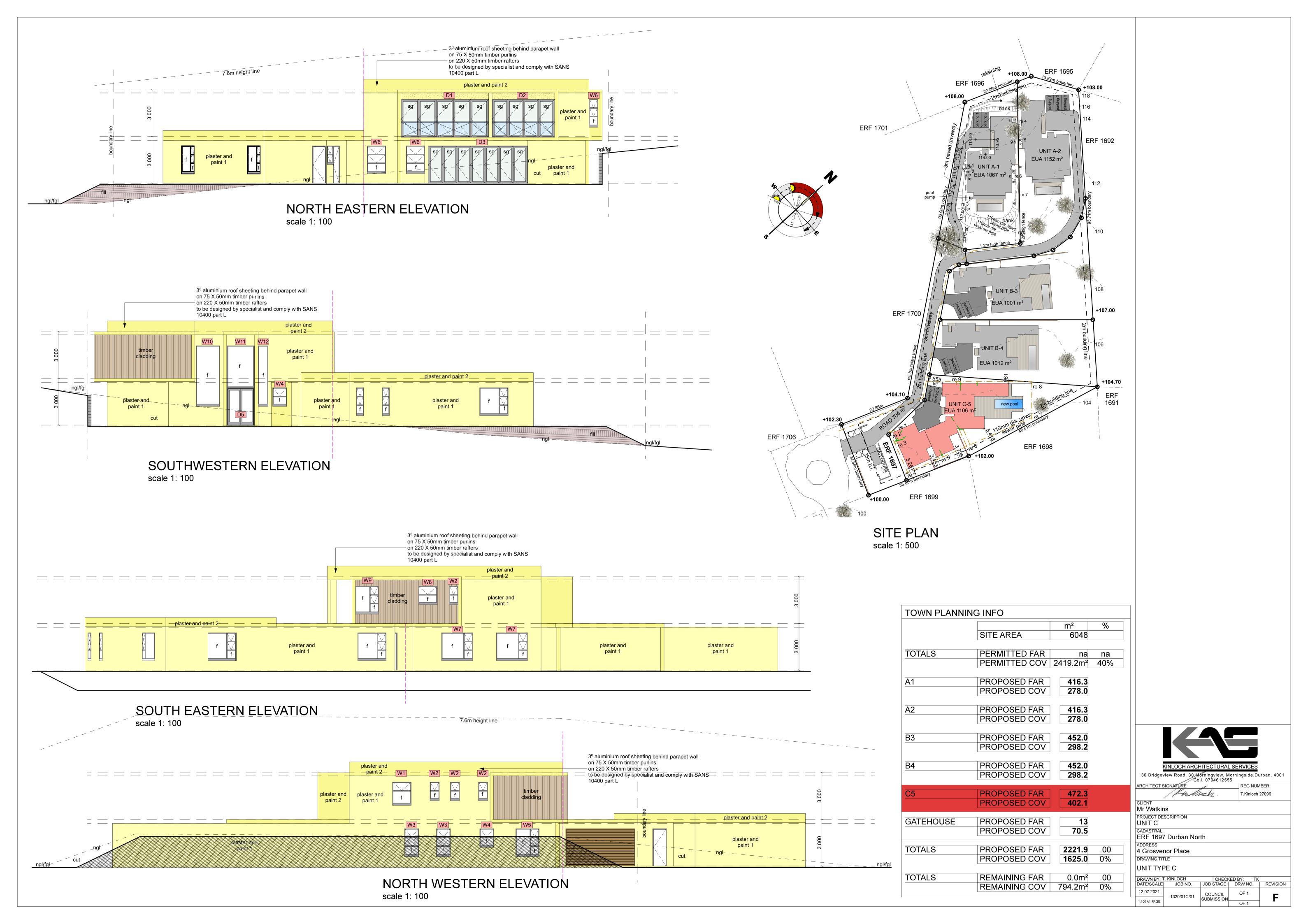
MAXIMUM OF 24M LENGTHS ALONG STRAIGHT RUNS

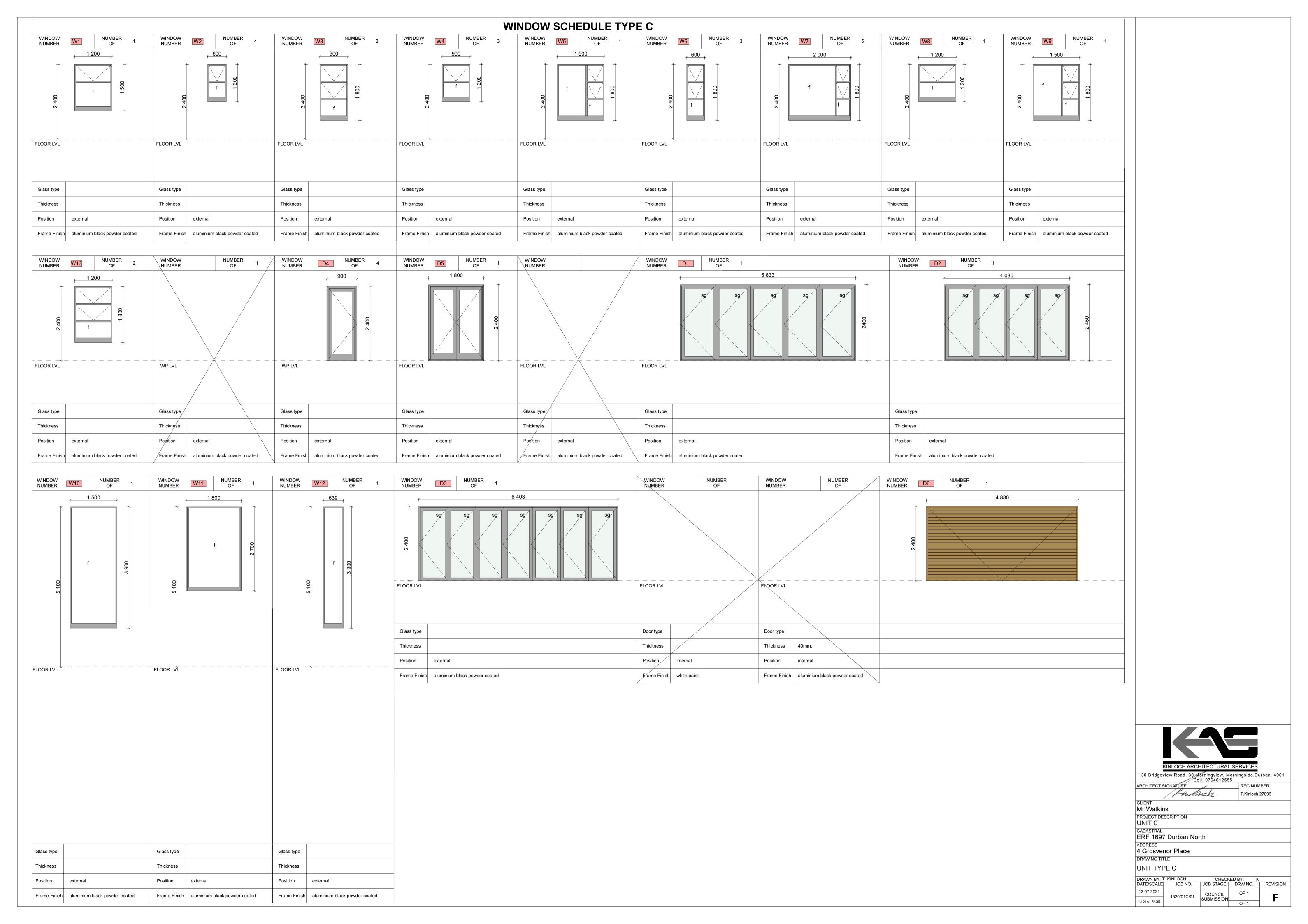
WHERE THE VERTICAL DROP FROM SOIL FITTINGS TO THE MAIN DRAIN EXCEEDS 1.2m THESE FITTINGS ARE TO BE ANTI-SYPHONED

REG NUMBER T.Kinloch 27096 Mr Watkins PROJECT DESCRIPTION UNIT C CADASTRAL ERF 1697 Durban North ADDRESS 4 Grosvenor Place DRAWING TITLE UNIT TYPE C

DRAWN BY: T. KINLOCH | CHECKED BY: TK | DATE/SCALE | JOB NO. | JOB STAGE | DRW NO. | REVISION 12 07 2021 COUNCIL 1320/01C/01 SUBMISSION 1:100 A1 PAGE

OF 1





ORIENTATION

Design and Calculation Submission

As per the National Compulsory regulator and in terms of the National Building Regulations we hereby submit Energy Usage/Efficiency Analysis and calculations based on SANS 10400 Part XA:2011 (eNERGY USAGE IN BUILDINGS) AND sans 204:2011 (Energy Efficiency in Buildings). These drawings indicate the calculated Energy usage and Energy Efficiency measures that were taken to ensure the building complies to the Deemed to Satisfy Requirements and or to achieve complience to all perfomance targets under the current regulated standards SANS 10400 Part XA:2011 and SANS

All calculations were done by the manual calculation method with use of the regulated standard tables and diagrams witin SANS 204:2011 Glazing Values for U and SHGC were obtained from the known and tested values "Smartglass

General Notes and Requirements

perfomance Data Manual".

he developer/contractor/owner will comply to the following General Notes below and provide the information as stipulated on completion of the project.

The developer/contractor/owner will comly to SANS 10400 Part XA:2011

The developer/contractor/owner will comply to the calculated end values, and applicable instructions to achieve compliance based on the calculations

Failure to comply to these drawings (EEU Series) will result in the Local Authority instructing work (Retrofitting) to be achieve compliance as per the National Building Regulation and their Mandate.

The developer/contractor/owner will provide the Architect and the Local Authority Glazing Certificates indicating that the correct glazing was used in accordance to the calculated data, compliance instruction and fitted to the correct Fenestration Device as indicated in the Fenestration table.

Only TIASA and SABS approved insulation may be used.

Perimeter Floor Insulation (SANS 204:2011 - 4.3.2.1) The developer/contractor/owner will provide the Architect and the Local Authority Insulation Certificate for perimeter floor insulation.

Floor Insulation - Under Surface Bed (SANS 204:2011 - 4.3.2.1)

It's Best practice to insulate under your surface bed, but the regulation only requires if The Developer/contractor/owner will using either in screed, under laminate or under carpet heating, conventional mat type piped. The Developer/contractor/owner will provide the Architect and the Local Authority Insulation Certificate

for under surface bed insulation (if installed) Underfloor/Surface Bed Insulation does not need to be installed if the declaration is signed that he/she will never install an underfloor heating system, but Perimeter Insulation will be required to comply to

Thermal Radiant Roof Insulation (SANS 204:2011 - 4.3.2.1)

The developer/contractor/owner will provide the Architect and the Local Authority Insulation Certificate for roof insulation.

Within the remainder of this submission

(SANS 204:2011 - 4.3.2.1)

Please Refer to each separate section within this submission for the applicable calculation data, details and any additional information pertaining to those section.

DECLARATION OF OWNER/DEVELOPER (UNDER FLOOR HEATING)

CANNOT GUARANTEE THERE WILL NOT BE A FUTURE UNDERFLOOR HEATING SYSTEM. so understand to comply to the functional regulation (SANS 204:2011 - 4.3.2.1) I/we will install underfloor/undersurface insulation only. And will install to the construction details within this submission to allow for the possible future installation of an undefloor heating system.

WILL NOT INSTALL UNDERFLOOR HEATING, so understand to comply to the functional regulation (SANS 204:2011 - 4.3.2.1) I/we will still be required to install perimeter insulation only. And will install to the construction details within this submission.

I/We_____WILL INSTALL UNDERFLOOR HEATING, so understand to comply to the functional regulation (SANS 204:2011 - 4.3.2.2) I/we will install underfloor/undersurface bed insulation only. And will install to the construction details within this

SIGN: _____ DATE: ____OWNER

2. Compliance SANS 10400-XA:2011 (Edition 1) - 4.4.3. (External Walls)

1. Compliance SANS 204:2011)4.1 SITE OPERATIONS AND 4.2 BUILDING ORIENTATION)

SIGN: ______ DATE: _____DEVELOPER

The building satisfies complience with the deemed to satisfy requirements under SANS 204:2011 (edition 1) -4.1 (Site

Site Orientation is North for Optimal Orientation given in figures B.1 TO B.6 is in accordance to 4.1. Sans 204.2011.

Orientation) Optimal Orientation (zone 5 - Durban = True North +- 15 Deg)

The building satisfies complience with the deemed to satisfy requirement under SANS 204.2011 (Edition 1) - 4.2 (Building

Building is Orientated North as per North sector for Orientation given in Figures B.1 to B.6 is in accordance to 4.2. SANS

Major Living Spaces are located on Southern Orientation.

The building satisfies complience with the deemed to satisfy requirements under SANS 10400XA Part 4.4.3.2 (EXTERNAL WALLS)

Building is constructed of Double skin 230mm and parts triple skin 345mm Masonary brick wall (no cavity) with external plaster finish and internal finish with additional plaster finish layer to all internal wall surfaces.

Product Specification and Calculation Data

Product R-Value data 9 obtained from clay brick. org

DECLARATION OF OWNER/DEVELOPER

have read and understood the above General Notes & Requirements and will ensure that all components and products speced will be fitted to achieve compliance in terms of SANS 10400XA - 2011 and SANS 204:2011 and will abide by the calculated data within this submission and install componets in accordance to the calculated data to achieve comliance.

_____ DATE: _____OWNER _____DATE: _____DEVELOPER

Design and Calculation Criteria

The following information is provided for accurate calculation for this project.

In terms of SANS 10400-A:2010(Edition 3) Table 1 (Occupancy or Building Clasification)

H4 (Dwelling House

In terms of SANS 10400-A:2010(Edition 3) Table 2 (Design Population)

H4 (Dwelling House) - 6 Persons per House

In terms of SANS 204:2011 (Edition 1) Table 5 (Constants for Conductance: U Value and Solar Heat Gain Coefficient: SHGC

Conductance Cu (zone 5) SHGC (zone 5)

In terms of Sans 10400XA (edition 1) Table 7 (min total R-Value of roof assembly)

Min required total R-Value (m2.k/w) - zone 1:3,7 Direction of heat flow - zone 5:up

in terms of Sans 204:2011 (edition 1) table 12 (maximum energy demand and energy consumption for lighting for the class of occupancy or building)

Maximum energy demand: 5kWh/m2 Maximum energy consumption: 5 kWh/m2

In terms of Sans 204:2011 (edition 1) table 7 (energy index0

Contractor to check all dimentiond on site and on drawings. Any and all discrepancies must be reported to the architect Only figured dimentions are to be taken. Do not scale off

This drawings is the property of BILL ELLENS ARCHITECTS. Copyright is reserved by the, and the drawing is issued on the condition that it is not ammended, copied, reproduced, retained or disclosed to any unauthorised person, either wholly or in part without the written consent of BILL ELLENS ARCHITECTS.

PLEASE NOTE:
THE EMPLOYER INDEMNIFIES THE ARCHITECT FOR ANY CLAIMS OR DAMAGES ARISING OUT OF OMISSIONS OR

ALTERATIONS TO THE STANDARD PRACTICE, INSTRUCTED BY THE EMPLOYER.

FIRE NOTE:
THIS DRAWING HAS BENN DESIGNED IN ACCORDANCE WITH THE SABS 0-400. THE FIREFIGHTING EQUIPMENT AND SERVICES INDICATED ON THIS DRAWING IS A GUIDELINE. ADDITIONS OR AMENDMENTS MAY BE REQUIRED DUE TO THE RECOMENDATIONS OF A QUALIFIED RATIONAL FIRE SPECIALIST OR THE FIRE DEPARTMENT AT TIME OF SUBMISSION.

THE RECOMENDATIONS MADE BY THE QUALIFIED RATIONAL FIRE SPECIALIST AND/OR FIRE DEPARTMENT, TAKE PRECEDENT OVER THE FIRE SERVICES INDICATED ON THESE DRAWINGS. THESE DRAWINGS ARE TO BE THEN READ IN CONJUNCTION WITH THE APPROVED FIRE SPECIALISTS DRAWINGS AND APPROVED RATIONAL DESIGN DOCUMENTS.

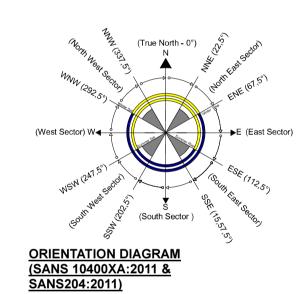
All work to comply with the NATIONAL BUILDING REGULATIONS ACT 103 OF 1977 thereto as well as the by-laws of the relevant municipality.

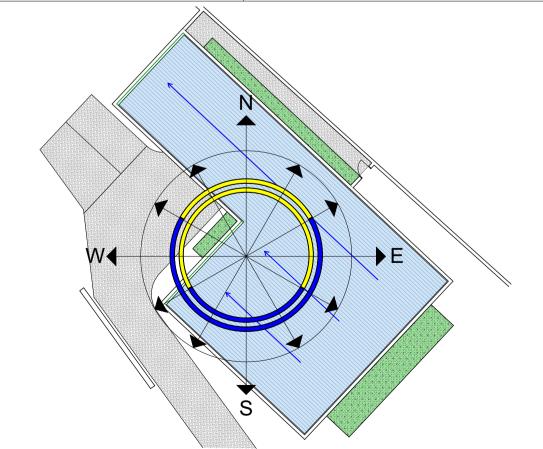
These drawings are to read in conjunction with the structural engineer's, civil engineer's, mechanical engineer's or plumbing consultants drawings where specified.

SABS materials used throughout. 75mm deep seal traps used with all waste fittings. All ies to be marked at the surface and sealed. Wc's to have s or p traps with side access cleaning eyes. All Whbs to have 32 diam, waste pipes and 40 diam, waste pipes to all other fittings. Floor drains to have 100diam, soil pipes.

GENERAL NOTES: All habitable rooms to have a minimum of 10% natural light and 5% natural ventilation to comply with the NATIONAL BUILDING REGULATIONS, otherwise specified, refer to mechanical engineers specifications only where applicable. All openings to have prestressed lintols over. Brickforce to every course for 5 courses above lintol. Brickforce to every fifth course of brickwork.

Use figured dimentions only, do not scale off drawing.





Building Orientation Relative to Orientation Diagram PROPOSED DWELLING HOUSE

				WALL C	ONSTRUCT	ION DATA	TABLE(SI	JMMARY)			
ZONE	Min R-Value WALL TYPES Required	TOTAL MASONARY THICKNESS	MASONARY WALL R- VALUE	EXTERNAL FINISH TYPES	EXTERNAL FINISH TOTAL THICKNESS	EXTERNAL FINISH R- VALUE	INTERNAL FINISH TYPES	INTERNAL FINISH TOTAL THICKNESS	INTERNAL FINISH R- VALUE	TOTAL R-VALUE OF ENTIRE WALL CONSTRUCTION	ACHIEVE COMPLIENCE
5	.35m2K/W masonary- clay stock with plaster finish external and internal	200mm	.44m2K/W	cement and sand plaster finish	15-20mm	0.18m2K/W	cement and sand plaster finish	15-20mm	0.18m2K/W	0.80m2K/W	yes (achieves better than)
5		-	-	-	-	-	-	-	-	-	-

3. Complience SANS 204:2011 (Edition 1) - 4.3.2 (floors)

The following must be performed to achieve Complience with the deemed to Satisfy Requirements under SANS 204:2011

Please Refer to the below calculation or data indicating the product used and the product R-VAlues, which in addition is highlighted on the Installation Details. Please note, we regard the installation of the underfloor/under surface bed insulation as best practice and will result in a (comfort factor) and will prepare the building for underfloor heating if required, now or in the

But if the Owner/developer as per signed declaration does not install underfloor heating, then the owner developer is still required to install perimeter insulation as per installation detail 1 to comply to the functional regulation in terms of 4.3.2.1. in addition the contractor/developer/owner will have perimeter insulation to all non Livable Areas, Garages, Stores etc

(installation Details 1 Applies), this is to prevent any heat /cold transfer loss between livable zones within the building and

The following min Values and requirements must be met to achieve complience.

The building has a floor area of less than 500m2

To satisfy the functional regulation The developer/contractor/owner will install insulation around the vertical edge of the surface bed perimeter and will comply to 4.3.2.1 a-c (refer to detail 1)

Must have an R-Value of not less than 1.0 for all climatice zones except zone 5 in screed, under laminate or under floor heating

To Satisfy the functional regulation

The developer/ contractor/owner will install undersurface be insulation and will comply 4.3.2.2. (refer to detail 2)

Must have and R-Value of not less than 1,5 for climatic Zones 1 and 2, This project is located in zone 5.

Product specifications and/or Calculation Data

Product installation details (obtained from "isoboard" product information and brochures and websites.) Product R-Value Data (obtained from "isoboard" product information and brochures and websites.)

Certificates for the above insulation will be presentated when installation or project has been completed and issued to the Building Inspector and the Owner/Developer.

	FLOOR INSULATION DATA TABLE(SUMMARY)												
ZONE	Insulation Use	Min R-Value Required	Product Description	Thickness	R-Value	ACHIEVE COMPLIENCE							
5	-	-	-	-	-	-							
5	-	-	-	-	-	-							

4. Complience SANS 204:2011 (Edition 1) - 4.3.6 (Roof Assemblies and Insulation)

The following must be performed to achieve complience with the deemed to satisfy Requirements under SANS 204:2011 (edition 1) -4.3.6 Roof Assemblies

Required: as per Sans 204:2011 (edition 1) table 8- zone 5 Durban with up direction of heat flow. Min R- Value 3,7

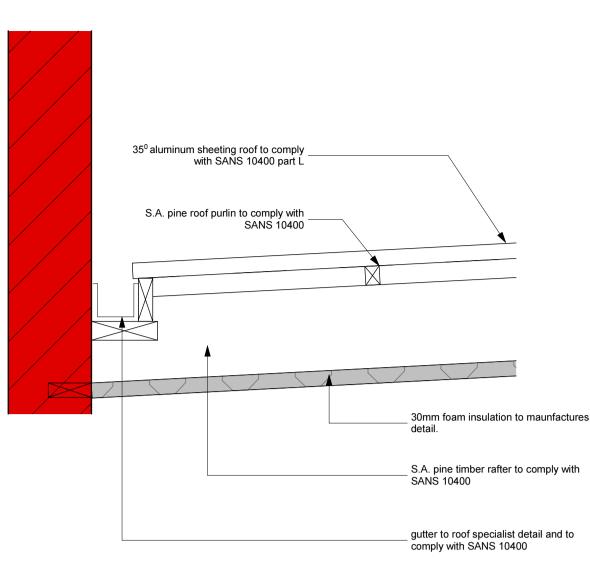
Normative Construction Values:
On this building we have 2 roofing and ceiling scenarios present, Please refer to each scenario drawing and calculation and location of those roofing scenarios on the location plan.

The Roof construction of the building is as follows.

8 LINEAR FLOUR

Un ventilated Roof space Roof Assembly 1





Product specifications and/or Calculation Data

Product installation details (obtained from "isoboard" product information and brochures and websites.) Product R-Value Data (obtained from "isoboard" product information and brochures and websites.)

Certificates for the above insulation will be presentated when installation or project has been completed and issued to the Building Inspector and the Owner/Developer.

	RO	OF INSULA	TION DATA	TABLE(SUI	MMARY)	
	Roof Description	Min R-Value Required	Radient Insulation Barrier	Thermal Insulation Barrier	R-Value	ACHIEVE COMPLIENCE
1	3.0 deg rafter, aluminum sheeting	2.7m2 K/W	Aluchusion d.sided Bubble Foil FR White	50mm foam board	2.8m2 K/W	yes (achieves better than)
2	-	-	-	-	-	-

LIGHTING

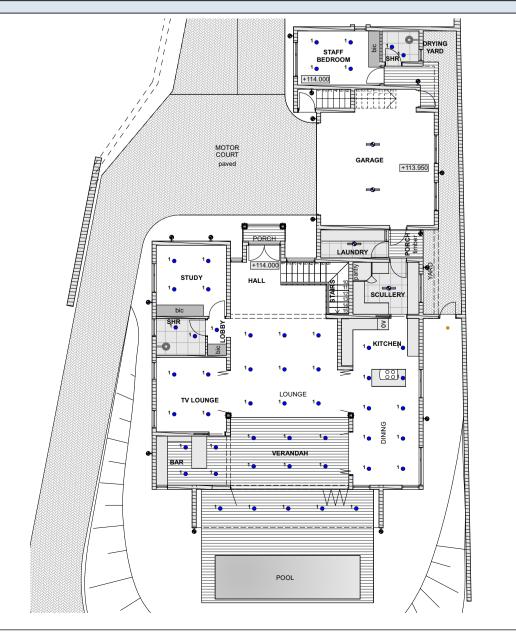
INSULATION

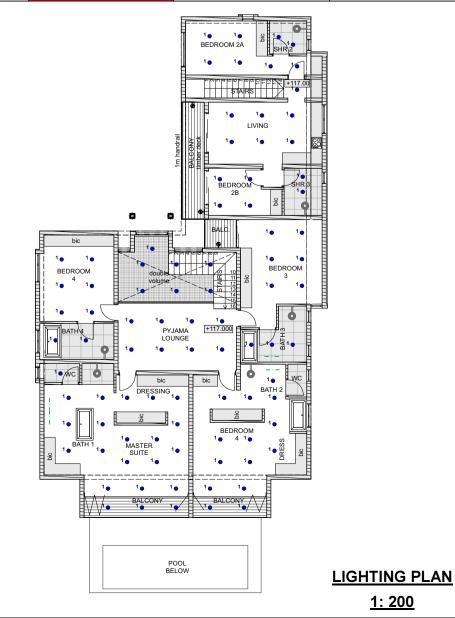
off dwg	off dwg-cad polyline	10400A TABLE 1	10400A TABLE 1	10400A TABLE 2	204 TABLE 12	204 TABLE 12	CALCULATED (A X DEMAND(W/m2)	CALCULATED (A X CONSUMPTION(kw H A)			
LEVEL	NET AREA	BUILDING CLASS	BUILDING OCCUPANCY	POPULATION	ENERGY DEMAND (W/m2)	ENERGY CONSUMPTION (kw/ha m2)	MAX ENERGY DEMAND (W/m2)	MAX ENERGY CONSUMPTION (kw H A)			
FLOOR AREA	473.7	H4	PROPOSED HOUSE	6 PERSONS	5	5	2368.5	2368.5			
	0				5	5	0	0			
TOTAL	473.7						2368.5	2368.5			
Light Fitting Dema	nd Schedule										
Fitting no. Brief Lighting Description Power Rating Quantity Total Power Usage											
							<u> </u>		<u> </u>		
1	LED	4.5	138	621							
2	COMPACT ELOURESCENT	20	17	340							

TOTAL **Total Calculated Energy Demand**

(RESULT IS LESS THAN ALLOWABLE

CALCULATED ENERGY CONSUMPTION													
Energy Consumption (DAYS PER WEEK X WEEK X WEEK X WEEK PER ANNUM X ASSUMED LIGHT USAGE IN HOURS PER DAY/EVENING)x(TOTAL WATTAGE OF LIGHT FITTINGS) = TOTAL ENERGY CONSUMPTION PER ANNUM													
Calculation 1 (ALL LIGHT FITTINGS EXCLUDING GARAGE AND STORE FITTINGS)													
DAYS PER WEEK	WEEKS PER ANNUM	ASSUMED LIGHT USAGE IN HOURS (17:00-22:00) HOURS PER A		TOTAL WATTAGE FOR SELECTED LIGHTS (KW)	TOTAL ENERGY CONSUMPTION PER AN	WATTS TO BE REMOVED							
7	52	5	1820	1.013	1843.66								
CALCULATION 2 (GARAGE AND STORE FITTINGS) - THESE LIGHTS ARE ONLY USED OCCASIONALLY													
Energy Consumption (DAYS	PER WEEK X WEEK X WEEKS PER ANNU	M X ASSUMED LIGHT USAGE IN HOURS PER DAY/EVENING)x(TOTAL WATT	AGE OF LIGHT FITTINGS) = TOTAL E	NERGY CONSUMPTION PER ANNUM									
DAYS PER WEEK	WEEKS PER ANNUM	ASSUMED LIGHT USAGE IN HOURS (17:00-22:00)	HOURS PER ANNUM	TOTAL WATTAGE FOR SELECTED LIGHTS (KW)	TOTAL ENERGY CONSUMPTION PER AN	NUM (KW/H A m2) MAX ALLOWED ENERGY CONSUMPTION							
7	52	1	364	0.2265	82.446								
1 2395 1926 106 \/RESULT IS JESS THAN ALLOWARIE) 2368 5 4/2													







4 Grosvenor Place DRAWING TITLE UNIT TYPE C DRAWN BY: T. KINLOCH CHECKED BY: TK
DATE/SCALE JOB NO. JOB STAGE DRW NO. REVISION 12 07 2021 COUNCIL 1320/01C/01

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	LAMP TYPE SCHEDULE	<u>LIGH</u>	• • • •	<u></u>				
lo. Type	Lamp Type Description Wattag	ge per lamp						
1 LED (Recessed Downlighter) LED (External PAR Fitting)	High Power PAR 16 - LED Input: 220v-230v Fitting Base: GU10 Light Colour: Warm White or Cool White Total Power Consumption: 4,5 Watts	4.5	11	Compact Flourescent Mini Type	Input: 220v - 230v Fitting Base: B22 or 327 Light Colour: Cool White Lumens: 495 - 605 (Vari		Wattage - 11 Watts)	11
2 LED (Starlight)	Low Voltage 12V Driver Input: 3,3V DC (12V AC/DC Transformed) Fitting Base: G4 Bi Pin 12V Lamp Light Colour: Natural White or Warm White Lumens: 105 Natural White & 75 Warm White Total Power Consumption: 1-2.25 Watts (Assumed Highest Wattage - 2.25)	2.25	12	LED (Foot Light/Brick Light) External	Fitting Light Colour: Cool White	Fitted 21x0,1w Fittings - Factory Fit LED on: 21x0.1 Watts (Total Wattage - 2.		2.1
3 LED (Foot Light/Brick Light) Internal	Low Voltage 24V Driver Fitting Base: PC Board Fitted 12x0,06w Fitting - Factory Fitted = Total 0,72 Watts Per Fitting Light Colour: Cool White LED Total Power Consumption: 12x0,6 Watts (Total Wattage - 0,72 Watts)	0.72	13	LED (Pool Light/Submer ssible)	Fitting Light Colour: RGB	Fitted 6x1w Fittings - Factory Fitted		6
4 LED (Bulkhead Cove Lighting)	LED Strip Lighting Per Linear Meter (914mm Exact Length) Low Voltage: 24 V Driver Fitting Base: PC Board Fitted 36x0,08w Fitting - Factory Fitted = Total 2,88 Watts Per Fitting Light Colour: Blue or White (Dependent on Clients Requirements) Max. amount of Light Bands Allowed per Controller - 8	2.88 (Per Length)		LED (Pond Light/Submerss ible)	Fitting Light Colour: Blue	Fitted 6x1w Fittings - Factory Fitted		6
5 Compact Flourescent Circular Type	Circular Type Flourescent Fitting Input: 220v - 230v Fitting Base: Circular or 2D Type Light Colour: Pure White or Warm White Lumens: 750 - 1320	35	14	LED (Pond Light/Submerssil le)	Fitting Light Colour: Blue	Fitted 6x1w Fittings - Factory Fitted		2.1 er 6 er 6 er 6 TIT
	Total Power Consumption: 32 - 35 Watts (Assumed Highest Wattage - 35 Watts) Wattage will Reduce to 16w - 28w if a 2D Type Fitting is used			Please refer to the		1 4.5 Services 4.5.1 Lighting and his submission using (Manual Calculate)		
6 Compact Flourescent Standard Type	Standard Type Flourescent Fitting (Baonette or Screw Type) Input: 220v - 230v Fitting Base: B22 or 327 Light Colour: Cool White or Warm White Lumens: 495 - 1210 (Varies on Colour and Wattage) Total Power Consumption: 8 - 20 Watts (Assumed Highest Wattage - 20 Watts)	20		Minimum Lighting SANS 10400-0. O Under 4.5.1.3 Th	g Levels shall be determin Compliance with the releva e Energy demand (power)	ed in accordance with the requirement national legislation is required for and energy consumption for the branch using table 12 for this particu	or safety. uilding has been	l
7 Linear Flourescent Type	T8 - Linear Flourescent Tube Input: 220v - 230v Fitting Base: G13 Light Colour: Cool White or Warm White Lumens: 2650 - 2760 (Varies on Colour and Wattage) Total Power Consumption: 2x32 Watts - Total per Fitting = 72 Watts)	72		wattage per year Light Fittings may PLEASE NOTE TOR DESIGN AN	may not be exceeded. y be replaced but fittings re THE FOLLOWING: THE E ND CALCULATION PURP	Only, Lights May be located in New eplaced must be of an equal wattage ELECTICAL LIGHTING LAYOUT THOSES ONLY INDICATING THE MA	ge or less. HAT IS ON THIS SHEET	
B Golf Ball Type Flourescent Candle Type Flourescent	Golf Ball and Candle Type Flourescent Input: 220v - 230v Fitting Base: E14 Light Colour: Cool White or Warm White Lumens: 240 - 270 (Varies on Colour and Wattage) Total Power Consumption per Lamp = 7 Watts) When Chandelier is indicated, The Light fitting Lamp Quantity will be indicated. Number of Lamp Fittings per Chandelier x Wattage per Lamp = Final Wattage	7		THE DESIGN MAINCREASED AN THAN THE WAT THE DEVELOPE CALCULATION F	D THE TYPE OF LAMP M TAGE INDICATED. ER DOES NOT HAVE TO S	UANTITY OF FITTINGS MAY BE I IAY BE CHANGED AS LONG AS I SUPPLY THE AMOUNT OF FITTIN L LAYOUT AND QUANTITIES ARE	TS EQUAL OR LESS IGS AS INDICATED (FOR	
9 LED (Picture Light)	Low Voltage 24V Driver Fitting Base: PC Board Fitted 66x0,07w Fittings - Factory Fitted = Total 4.62 Watts Per	4.46				AL LIGHTING LEGEND		
	Fitting Light Colour: Cool White LED Total Power Consumption: 36x0.08 Watts (Total Wattage = 2.88 Watts) Max amount of Light Bands Allowed per Controler - 8				•	Ceiling mounted light fitting		
9 LED (Picture Light)	Low Voltage 24V Driver Fitting Base: PC Board Fitted 66x0,07w Fittings - Factory Fitted = Total 4.62 Watts Per Fitting Light Colour: Cool White LED	4.46			•	Recessed low voltage downlight Internal Wall Mounted Light Fitting		
10 1 50 (0) 0 0	Total Power Consumption: 36x0.08 Watts (Total Wattage = 2.88 Watts) Max amount of Light Bands Allowed per Controler - 8	2.02			•	External Wall Mounted Light Fitting		
10 LED (Star Strip Lighting)	Low Voltage: 24 Driver Fitting Base: PC Board Fitted 36x0,08 Watts Per Fitting Light Colour: Blue or White (Dependant of Clients Requirements) Total Power Consumption: 36x0.08 Watts (Total Wattage = 2.88 Watts)	2.88 (Per Length)				Ceiling Fan & Light Fitting		
	Max amount of Light Bands Allowed per Controler - 8					Flourescent Light Fitting		

HOT AND COLD WATER RETICULATION

9. Complience SANS 204:2011 (Edition 1) 4.5 Services - 4.5.2 Hot Water Services

Please refer to Calculation data within this submission using. (please refer to Drawing and Tables on this drawing which are obtained from Table 2 and 5 from SANS 10252:1 (Edition 3)

Developer/Contractor/Subcontractor (Plumber)/owner will comply to SANS 10252. All applicable Parts with

regards to supply and installation of a water supply system (Hot and Cold).

Developer/Contractor/Subcontractor (plumber)/Owner will comply to SANS 204 Part 4.5.2 Hot Water Services

4.5.2.1 a mn of 50% by volume of the average hot water heating requirement shall be provided by means other than electrical restance heating, including but not limited to solar, heating, heat pumps, heat recovery

from other systems or processes (extracted from SANS 204:2011 (edition 1)
4.5.2.2 The solar water system shall comply with the following regulations in addition.

1. Thermal performance SANS 1307 and SANS 10106 2. Installation SANS 10254.

Entire Exposed piping (hot) that means from the hot water storage or producing device (tanks or gysers) will be lagged with a thermal insulation material with 1m of the Cold Supply to the hot water storage or producing

(tanks or gysers) as per SANS 204.2011 - Part 4.5.2.9.

Insulation Material will comply to TIASA AND SABS regulations.

The insulation material will be protected from the effects of weather and sunlight, and be able to withstand the temperature of the piping and will have a min R-Value of 1.5 as per Table 13 determined with a hot water surface temperature of 60°C and an ambient temperature of 15°C.

Hot water storage or producing device (tanks or gysers) will be insulated by a insulation material with a min R-Value of 2 as per SANS 204:2011 - Part 4.5.2.6.

THEORETICAL HOT WATER CALCULATION

HOT WATER DEMAND CALCULATION

6 person home

Water demand based on medium to high rental (domestic residence - moderate to high income) "GUIDELINES FOR HUMAN SETTLEMENT PLANNING AND DESIGN" 25-145 litres per person per day.

Assumed highest usage 145 litres

6 persons x 145 litres (6x145) = 870 litres per day

870 Litres per day x 365 days per year (870 x 365) = 317 550 Per Annum.

Total Hot water Storage at 60deg = 300L per day

THIS HOT AND COLD WATER LAYOUT DRAWING IS A GUIDE ONLY,
ONLY A TRAINED PLUMBER (VIEW DESCRIPTION UNDER SANS 10400-A:2010) MAY INSTALL THE HOT
AND COLD WATER SYSTEM AND ALL HOT WATER VESSELS,(CONVENTIONAL AND SOLAR)
ONLY A TRAINED AND QUALIFIED ELECTRICAL CONTRACTOR MAY INSTALL THE ELECTRICAL SYSTEM
REQUIRED FOR HOT WATER VESSELS.

A TRAINED PLUMBER MAY ALTER THE SYSTEM AS REQUIRED, BUT MUST ADHERE TO ALL SANS REGULATIONS AT ALL TIMES FOR PIPE ROUTING, SIZES, SUPPLY, AND INSULATION. ALL HOT WATER MANUFACTURING DEVICES MUST BE SABS TESTED AND APPROVED AND MUST BE INSTALLED IN ACCORDANCE.

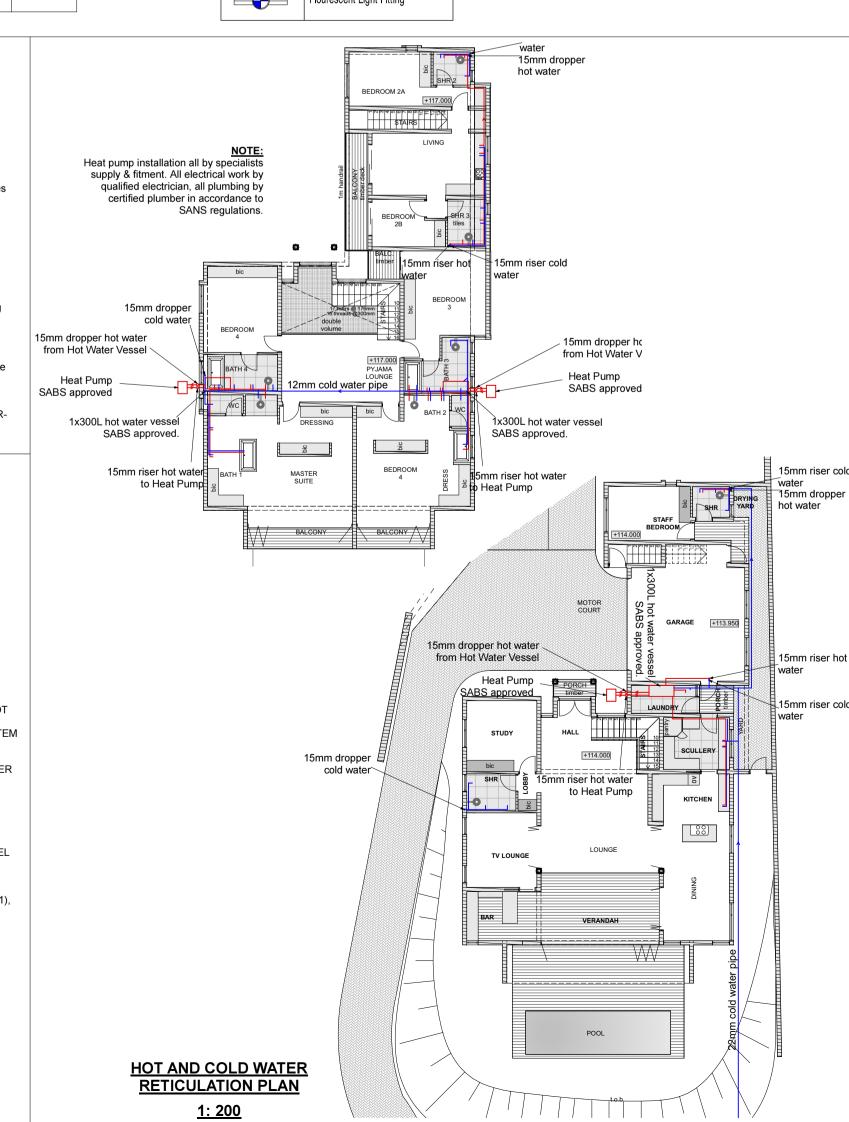
DOMESTIC SOLAR HEATING WITH HOT WATER STORAGE VESSELS, WITH A HOT WATER

MAINTAINANCE HEATING ELEMENT WILL BE USED.

DOMESTIC HEAT PUMP WITH HOT WATER STORAGE VESSEL, WITH A HOT WATER MAINTAINANCE
HEATING ELEMENT WILL BE USED.

dOMESTIC rINNAI ON DEMAND IN LINE GAS WATER HEATER WILL BE USED, NO HOT WATER VESSEL
REQUIRED, (AS ON DEMAND/REQUIRED)

DEFINITION OF A TRAINED PLUMBER UNDER SANS 10400-A:2010
Any person who in the trade of plumbing has, interms of the Manpower Training Act, 1981 (act no. 56 of 1981), passed a qualifying trade test, has been issued with a certificate of proficiency or has obtained a National Certificate in Construction Plumbing, National Qualification Framework Level 3.



Energy Effiency Calculatio	ons_		hu ···		<u>: -14L</u>	<u>ESTRATIO</u> ¬	<u></u>					
CLIENT: CADASTRAL DESCRIPTION: SITE ADDRESS:			Watkins Erf 1697 Durb 4 Grosvenor P	lace								
ROPOSAL:	Area 206.4		proposed new % Total 30.96		Fotal Area 43.970							
OCCUPANCY CLASSIFICATION: LIMATIC ZONE: GLASS DESCRIPTION:			H4 5.000 Single clear ar			_						
RAME:	Area	Zone	Aluminium Max Conducti	ance	Fotal Conductance Value		Area		Solar Heat Gain			Total SHGC
Max Conductantance North East Elevation	206.4	H 1	4 288.960 Area		288.513 Cherefore complies Aggregate C value	SOLAR Heat Gain SHGC Table 6	206.4 P		22.704 Total	•0.5 therefore G is	Exposure Factor Table C	therefore complies Aggregate SHGC
N1 N4	1.9	1.	7 3.230 7 2.380	5.73 0 5.73	18.508 13.637	0.66 0.66	0.: 0.:	1 1.7 1 1.7	0.059 0.059	0.029 0.029	0.74 0.74	1.578 1.162
N5 N5 N5	1.4 1.4 1.4	1.	4 1.960	0 7.9	15.48 ² 15.48 ² 15.48 ²	0.81		1 1.5 1 1.5 1 1.5	0.667 0.667 0.667	0.333 0.333 0.333	0.37 0.37 0.37	0.587 0.587 0.587
W10 D7	0.8				6.952 16.353		0.: 0.:		0.091 0.318	0.045 0.159	0.84 0.52	0.599 0.872
North West Elevation	W	Н	14.44 Area	Conductance Table 6	Aggregate C value	SHGC Table 6	<u>P</u>	 -	2.527 <u>Total</u>		Exposure Factor Table C	
MD	0.5				6.715 17.419		0.3	1 1.7 1 5.7	0.059 0.175	0.029 0.088	0.75 0.69	0.516 1.384
Cough Wash Florence	lu.	I	3.890		A	SUCC Table C		ļ.,	0.175		Formania Frankri Tabla C	ASUGG
South West Elevation N2 N3	W 1.7	+	Area 7 2.890 2.380	5.73	Aggregate C value 16.560 13.637	+	<u>P</u> 0.: 0.:	1 1.7	Total 0.059 0.136	0.029 0.068	Exposure Factor Table C 1.17 1.09	2.232 1.712
N8 N6 N6	8.0 8.0 8.0	1.	7 1.360	0 7.9	6.952 10.744 10.744	0.81	0.3 0.3 0.1	3 2.2	0.188 0.136 0.059	0.094 0.068 0.029	1.02 1.09 1.17	0.727 1.201 1.289
			8.87						0.059	3.020		
South East Elevation W9	W 0.5	H 1.	Area 0.850		Aggregate C value 6.715	SHGC Table 6 0.81	<u>P</u>		<u>Total</u> 0.059	0.029	Exposure Factor Table C 0.84	Aggregate SHGC 0.578
W6 W6 D1	8.0 8.0 6		7 1.360	7.9	10.744 10.744 75.636	0.81	2.: 0.: 2.:	1.7	1.000 0.059 0.778	0.500 0.029 0.389	0.41 0.84 0.53	0.452 0.925 4.617
			16.770	0					1.895			
Totals			43.970	ין	288.513				4.656			21.607
v d 5	72.9	Energy Index	4 102.06			To an		<u> </u>				
North East Elevation N1 N4	<u>w</u> 1.9 1.4			0.66	Energy Constant D1-Ca 0.000 0.000	1	Evergy Constant D1- Cb 0.8 0.8	1	Energy Contstant D1Cc 0.02 0.02		<u>Conductance Table 6</u> 5.73 5.73	2.076 1.529
W5 W5	1.4	1.	4 1.960 4 1.960	0 0.81 0 0.81	0.000	1 1	3.0 3.0	0.94 0.94	0.02 0.02		7.9 7.9	1.504 1.504
N5 N8 D7	1.4 0.8 0.9	1.	1 0.880	0.81	0.000 0.000 0.000	1	3.0 3.0 3.0	3 1	0.02 0.02 0.02		7.9 7.9 7.9	0.709 1.454
		Energy Index	Max Agregate	AC Energy Value								10.279
North West Elevation N9	W 0.5	H 1.	Area 7 0.850	0 0.81	0.000		0.88		0.02		7.9	
MD	1.6 Facade Area	Energy Index		O 0.66 AC Energy Value	0.000	0 1	0.88	В[1	0.02		5.73	2.114 2.854
South West Elevation	73.1 W	. 1. H	4 102.340 Area	0			-	8				4.0.=
N2 N3 N8	1.7 1.4 0.8	1.	7 2.380 1 0.880	0 0.66 0 0.81	0.000 0.000 0.000	1 1	0.48 0.48 0.48	1 3 1	0.02 0.02 0.02		5.73 5.73 7.9	
W6 W6	8.0 8.0				0.000 0.000		0.48 0.48		0.02 0.02		7.9 7.9	
Parish Parish	41.7	Energy Index	4 58.38	AC Energy Value								7.242
South East Elevation W9 W6	W 0.5				0.000		0.93		0.02 0.02		7.9 7.9	
W6 D1	0.8	1.			0.000		0.93		0.02 0.02		7.9 5.73	1.217 8.965 11.990
Net Floor Area - 1st Floor	Area 247.2	15%	Total 37.080	Tot	al Area 47.610							11.330
OCCUPANCY CLASSIFICATION: CLIMATIC ZONE: GLASS DESCRIPTION:			5.000 Low E glass									
FRAME:	Area	Zone	Aluminium Max Conductian	nce Tot	al Conductance Value	Are	ea I	Zone	Solar Heat Gain			Total SHGC
Max Conductantance	247.2	1.4				DLAR Heat Gain	247.2		27.192			27.065 therefore complies
North East Elevation W7	1.1	1.1	1.210	Conductance Table 6 Agr	6.933	1GC Table 6 P 0.66	0.1	1.1		0.045		0.591
W10 W10 W10	0.5 0.5 0.5	1.1 1.1 1.1	0.550	5.73 5.73 5.73	3.152 3.152 3.152	0.66 0.66 0.66	0.1 0.1 0.1	1.1 1.1 1.1	0.091	0.045	0.74	0.269
W10 W5 W10	0.5 1.4 0.5	1.1 1.7 1.1	2.380	5.73 5.73 5.73	3.152 13.637 3.152	0.66 0.66 0.66	0.1 0.1 0.1	1.1 1.7 1.1	0.059	0.029	0.74	1.162
W10		1.1	6.340				0.1		0.604			
North West Elevation N9 N11	0.5 1.4	H 1.7 3.7	0.850	Conductance Table 6 Agr 5.73 5.73	gregate C value Sh 4.871 29.681	D	0.2	<u>H</u> 2.2 4.6				0.421
W12 MD	0.5 1.6	3.7	1.850	5.73 5.73	10.601 25.670	0.66 0.66	0.9 0.9	4.6	0.196	0.098	0.64	0.781
			6.330						0.243			
N2 N3	W 1.7 1.4	H 1.7 1.7	2.890	Conductance Table 6	regate C value 5.16.560 13.637	1GC Table 6 P 0.66 0.66	0.1 0.1	<u>H</u> 1.7				2.232
N7 N10	1.1 0.5	1.1 1.1	1.210 0.550	5.73 5.73	6.933 3.152	0.66 0.66	0.1 0.1	1.1 1.1	0.091 0.091	0.045 0.045	1.17 1.17	0.934 0.425
D5 D6 D10	1.9 1.3 1.6	2.2 2.2 2.2	2.860	5.73 5.73 5.73	23.951 16.388 20.170	0.66 0.66 0.66	1.2 1.2 1.2	2.8 2.8 2.8	0.429	0.214	0.75	1.416
			17.590						0.429			
South East Elevation N9	0.5	H 1.7	0.850	Conductance Table 6 Agr	4.871	1GC Table 6 P	0.1	1.7				0.634
D2 D3	5.4	2.2		5.73 5.73	68.072 26.473	0.66 0.66	1.2 1.2	2.8 2.8		0.214		
Totals			47.610		307.357				2.192			27.065
	Facade Area	Energy Index	Max Agregate A	.C Energy Value								
North East Elevation	74.52 <u>w</u>	1.4 <u>H</u>	75.920 <u>Area</u>	SHGC Table 6 End		eating Shading D2 Eve		Cooling Shading D3	Energy Contstant D1Cc		Conductance Table 6	
N7 N10 N10	1.1 0.5 0.5	1.1 1.1 1.1	0.550 0.550	0.66 0.66 0.66	0.000 0.000 0.000	1 1 1	0.8 0.8 0.8	1 1 1	0.02 0.02 0.02		5.73 5.73 5.73	0.353 0.353
N10 N10	0.5 0.5 1.4	1.1 1.1 1.7	0.550 0.550	0.66 0.66 0.66	0.000 0.000 0.000	1 1 1	0.8 0.8 0.8	1 1 1	0.02 0.02		5.73 5.73 5.73	0.353 0.353
N5	0.5	1.1	0.550	0.66	0.000	1	0.8	1	0.02		5.73	
	Facade Area 42.62	1.4 H	Area									
W10	W	1.7 3.7 3.7	0.850 5.180	0.66 0.66 0.66	0.000 0.000 0.000	1 1 1	0.88 0.88 0.88	1	0.02 0.02 0.02		5.73 5.73 5.73	3.602
North West Elevation N9 N11	0.5 1.4	3.7		0.66	0.000	1	0.88	0.84			5.73	
North West Elevation N9 N11 N12	0.5 1.4 0.5 1.6	2.8		C Engravi Value								
N10 North West Elevation N9 N11 N12 ND	0.5 1.4 0.5 1.6 Facade Area 77.3	2.8		ac Energy value				1	0.02		5.73	
North West Elevation N9 N11 N12 MD South West Elevation N2 N3	0.5 1.4 0.5 1.6 Facade Area 77.3 W 1.7	2.8 Energy Index 1.4 H 1.7 1.7	78.700 Area 2.890 2.380	0.66 0.66	0.000	1 1	0.48 0.48	1	0.02		5.73	
North West Elevation N9 N11 N12 MD South West Elevation N2 N3 N7 N10 D5	0.5 1.4 0.5 1.6 Facade Area 77.3 W 1.7 1.4 1.1 0.5	2.8 Energy Index 1.4 H 1.7 1.7 1.1 2.2	78.700 Area 2.890 2.380 1.210 0.550 4.180	0.66 0.66 0.66 0.66 0.66	0.000 0.000 0.000 0.000	1 1 1	0.48 0.48 0.48 0.48	1 1 1 1 0.73	0.02 0.02 0.02 0.02		5.73 5.73 5.73	0.522 0.237 1.446
North West Elevation N9 N11 N12 MD South West Elevation N2 N3 N7 N10 D5 D6	0.5 1.4 0.5 1.6 Facade Area 77.3 W 1.7 1.4 1.1	2.8 Energy Index 1.4 H 1.7 1.7 1.1	78.700 Area 2.890 2.380 1.210 0.550 4.180 2.860	0.66 0.66 0.66 0.66	0.000 0.000 0.000	1 1 1	0.48 0.48 0.48	-	0.02 0.02 0.02 0.02 0.02		5.73 5.73	0.522 0.237 1.446 0.989 1.217
North West Elevation N9 N11 N12 MD South West Elevation N2 N3 N7 N10 D5 D6 D10	0.5 1.4 0.5 1.6 Facade Area 77.3 W 1.7 1.4 1.1 0.5 1.9 1.3 1.6 Facade Area 43.23	2.8 Energy Index 1.4 H 1.7 1.7 1.1 1.1 2.2 2.2 2.2	78.700 Area 2.890 2.380 1.210 0.550 4.180 2.860 3.520 Max Agregate A 44.630	0.66 0.66 0.66 0.66 0.66 0.66	0.000 0.000 0.000 0.000 0.000	1 1 1 1 1	0.48 0.48 0.48 0.48 0.48	0.73 0.73	0.02 0.02 0.02 0.02 0.02		5.73 5.73 5.73 5.73	0.522 0.237 1.446 0.989
W5 W10 North West Elevation W9 W11 W12 MD South West Elevation W2 W3 W7 W10 D5 D6 D10 South East Elevation	0.5 1.4 0.5 1.6 Facade Area 77.3 W 1.7 1.4 1.1 0.5 1.9 1.3 1.6	2.8 Energy Index 1.4 H 1.7 1.7 1.1 1.1 2.2 2.2 2.2 Energy Index	78.700 Area 2.890 2.380 1.210 0.550 4.180 2.860 3.520 Max Agregate A 44.630 Area 0.850	0.66 0.66 0.66 0.66 0.66 0.66	0.000 0.000 0.000 0.000 0.000	1 1 1 1 1	0.48 0.48 0.48 0.48 0.48	0.73 0.73	0.02 0.02 0.02 0.02 0.02 0.02		5.73 5.73 5.73 5.73	0.522 0.237 1.446 0.989 1.217 6.685

