



ENERGY EFFICIENCY REPORT
SANS 10400 XA AND SANS 204

ANEMOON

BUILDING CLIMATIC ZONE 2: TEMPERATE INTERIOR:

ORIENTATION:
THE LONGER AXIS OF THE BUILDING IS ORIENTATED WITHIN THE OPTIMAL PARAMETERS OF 10 DEG. WEST AND 14 DEG. EAST, MEASURED FROM TRUE NORTH.

CONCLUSION:
THE DESIGN COMPLIES WITH THE MIN. REQUIREMENTS OF SANS 204:2011 4.1 & 4.2 FOR ORIENTATION SECTORS

ROOF CONSTRUCTION:
REQUIRED MIN R-VALUE (THERMAL RESISTANCE)(m2 KW)
CLIMATIC ZONE 2

=3.2 m2 KW

CONSTRUCTION TYPE R-VALUE:
UNVENTILATED CEMENT TILES 22-45 DEG. PITCH WITH CATHEDRAL OR OPEN BEAM CEILING

CEMENT COVERING MATERIAL R-VALUE: 0.9 m2 KW
R-VALUE FOR CEILING: 10mm gypsum plaster board: 0.06
m2 KW
REFLECTIVE FOIL INSULATION: 0.74
m2 KW
TOTAL R-VALUE: 1.7 m2 KW

REQUIRED R-VALUE FOR INSULATION: 2.1m2 KW

RECOMMENDED INSULATION:

RIGID EXTRUDED POLYSTYRENE
DENSITY OF 30KG/M3
THICKNESS OF 60mm

Note: Any insulation can be used, as long as min thermal resistance is achieved.

ESTIMATED ENERGY CONSUMPTION:
OCCUPANCY: H4

THEORETICAL ANNUAL ENERGY CONSUMPTION:

MAX ENERGY DEMAND
5kWh/m2 (H4) x 237m2 (NET) = 1185W
15 x HANGING LIGHT PENDANTS @ 30W = 450W
27 LOW VOLTAGE DOWNLIGHTERS @ MAX 15W = 405W
5 LOW VOLTAGE OUTDOOR WALL LIGHTS @ 11W = 55W
2 LED FLUORESCENT LIGHT FITTING @ 18W = 36W

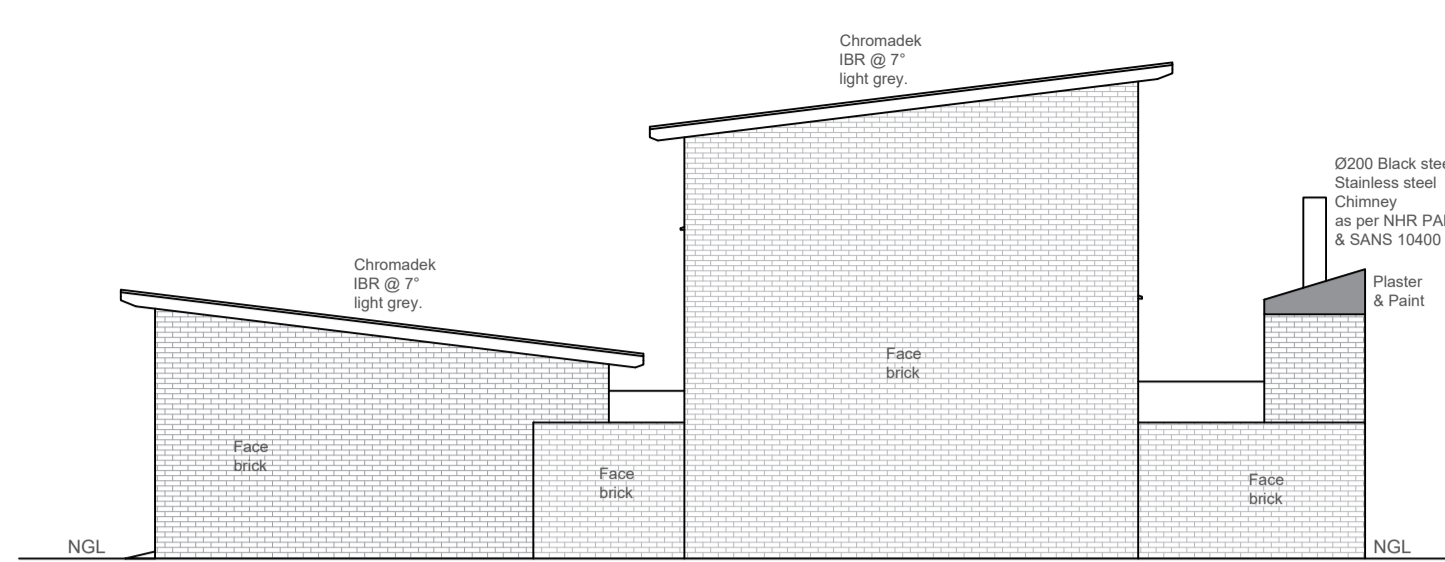
Max demand: 450 + 405 + 55 + 336 = 946W (<max demand)
946W/237m2 = 4.0W/m2

MAX ENERGY CONSUMPTION:
5 kWh/m2 (H4) x 237m2 (NET) = 1185W
1185 kWh/m2 per annum

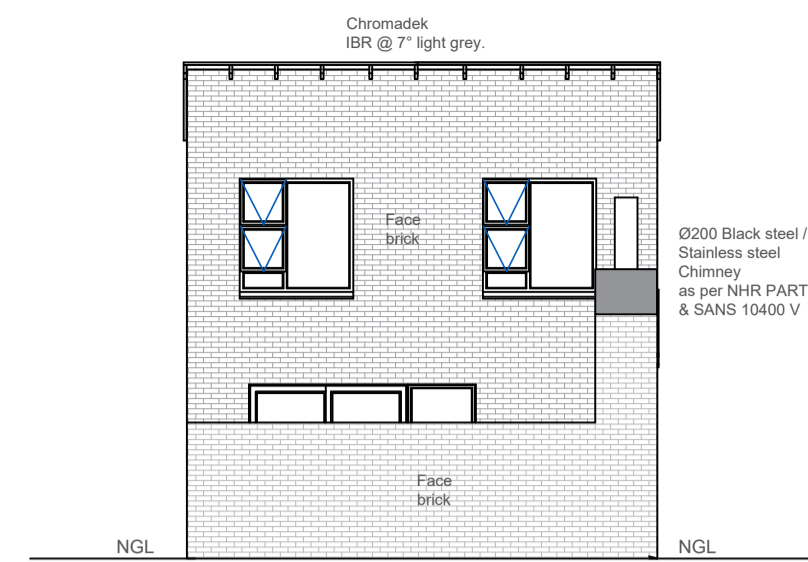
On 3.5h per day 365 days/annum = 1277.5 hours
0.9 x 1277.5 = 1150kWh/a < max demand

CONCLUSION:
IF LOW ENERGY DEMAND LIGHT FITTINGS ARE USED AS SHOWN THE THEORETICAL LOAD SHOULD BE LESS THAN THE MAX DEMAND AS CALCULATED.

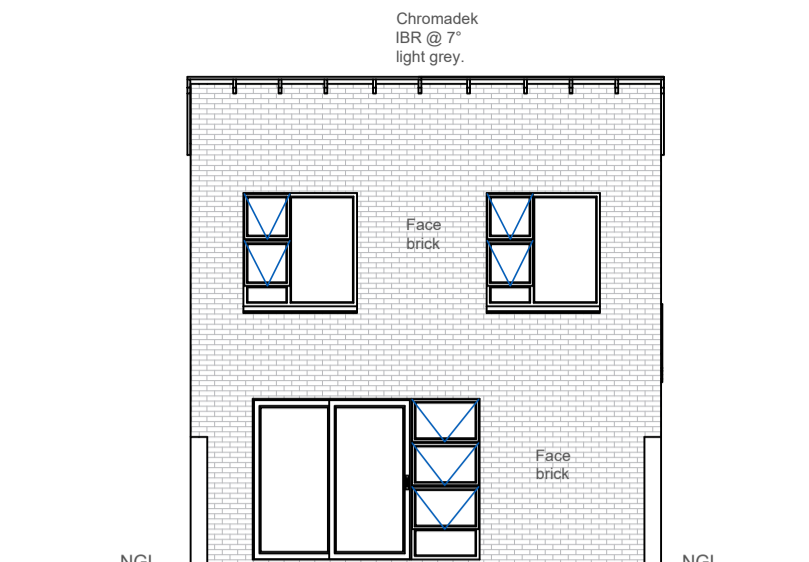
*Extruded polystyrene is recommended - isoboard on expanded polystyrene, or any other similar insulation with the required R value



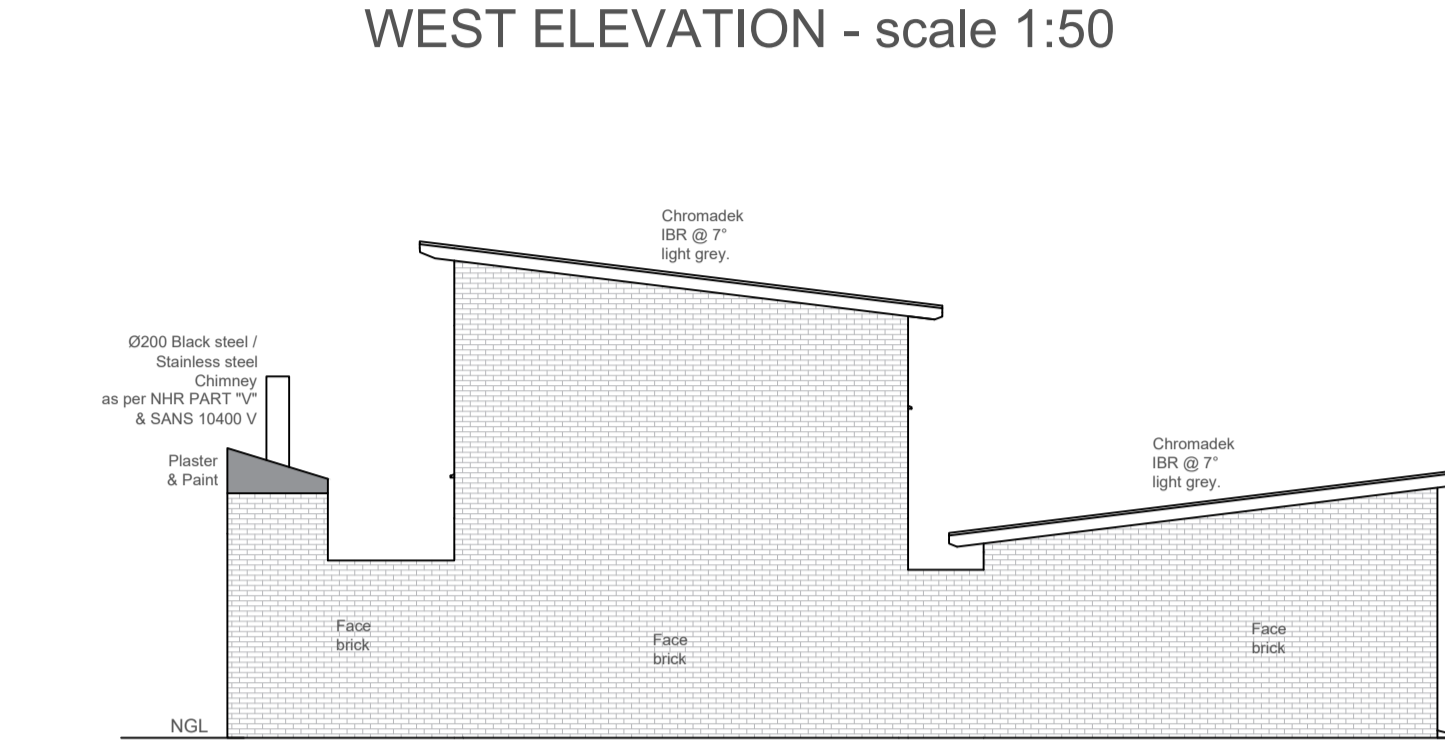
WEST ELEVATION - scale 1:50



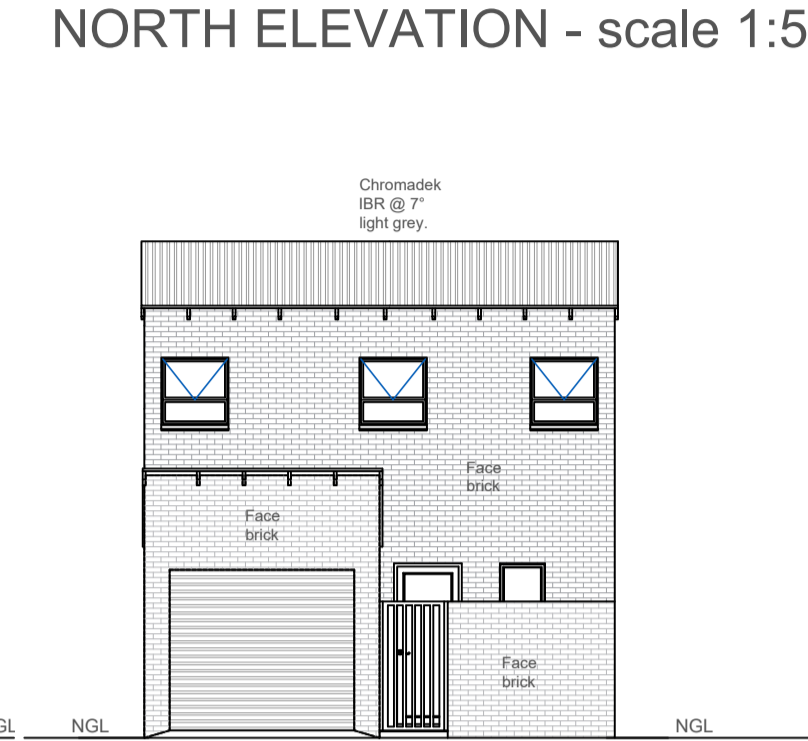
NORTH ELEVATION - scale 1:50



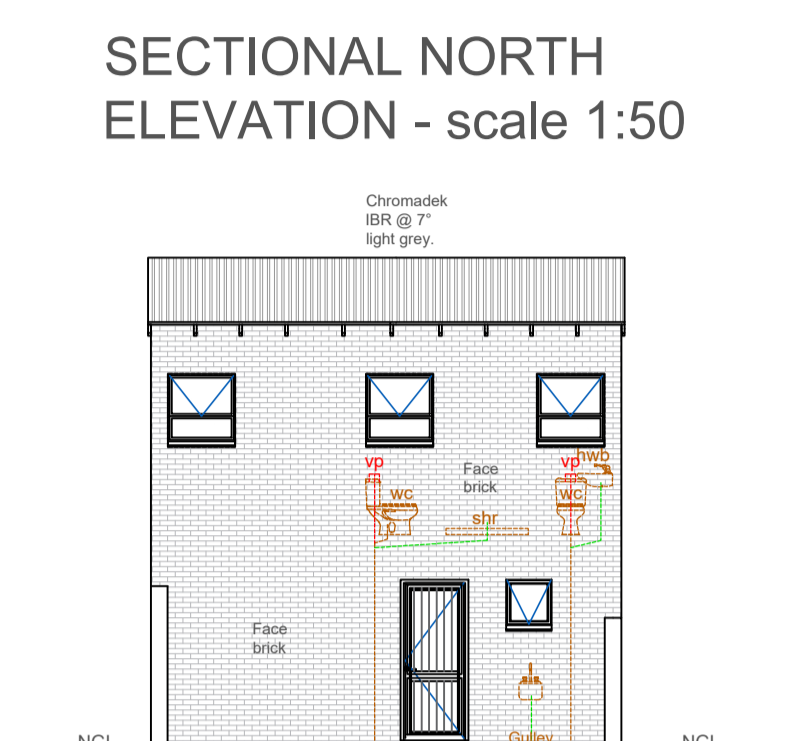
SECTIONAL NORTH ELEVATION - scale 1:50



EAST ELEVATION - scale 1:50



SOUTH ELEVATION - scale 1:50



SECTIONAL SOUTH ELEVATION - scale 1:50



HOT WATER SUPPLY:

Type of Accommodation:	Dwelling houses - Medium Rental: 115-140
L/capita/day	120L
Assumed Hot Water Consumption:	4 Per Day
No. of Persons:	480L
Assumed Daily Hot Water Consumption:	174.72 KL - Based on daily design occupancy per week
Assumed Annual Hot Water Consumption:	87.36 KL - Minimum volume of hot water to be heated by means other than electrical resistance heating
50% of Annual Hot Water Consumption:	240L - To be heated by means other than electrical resistance heating

Insulation Requirements
Internal diameter of Hot Water Service Pipe: ≥80 mm
Minimum Required R-Value for pipe insulation: 1 Refer SANS 204 (4.5.2)

A min of 50% by volume of the annual average hot water heating requirement shall be provided by means other than electrical resistance heating.

The heat pump system should be maintained in accordance with the requirements given in SANS 10252-1.

The geysers as per SABS 10254.

HEAT PUMP TO BE USED TOGETHER WITH TYPICAL GEYSER INSTALLATION TO SUPPLY 50% OF REQUIRED HOT WATER CONSUMPTION.

GENERAL FIRE NOTES:

ROOFS ACCORDING TO SANS 10400-"A" ZONE ZAR VALUE (M.K/W) = 3.2 WITH A DIRECTION OF HEAT FLOW

SHADING ACCORDING TO SANS 10400-"A" SANS 204

HEATING SYSTEMS ACCORDING TO SANS 10400-"A" AND SANS 10252 WITH NOT MORE THAN 50% ASSISTANCE.

WIDTH OF ENTRANCE IS 4500MM WITH NO OBSTRUCTION

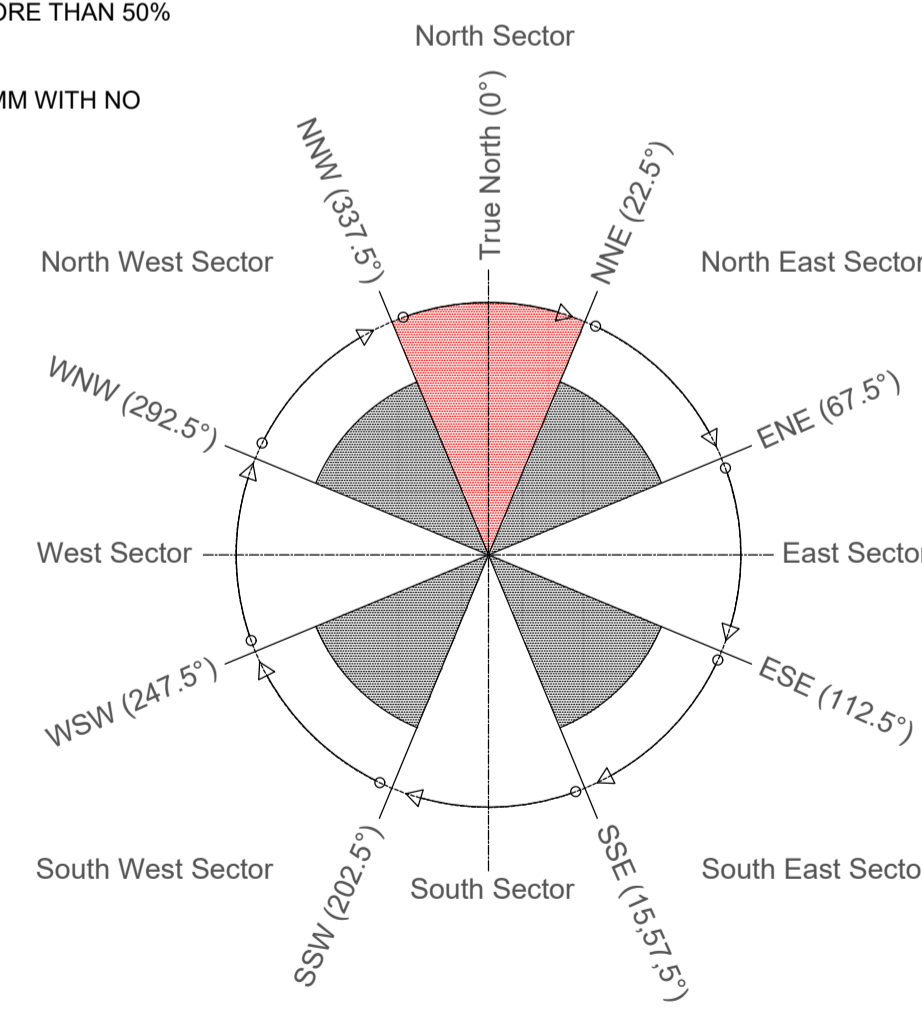


Figure 1 - Orientation Sectors

SINGLE STORY UNIT AREA SCHEDULE: X14

Ground floor	79,0m²
Garage	38,8m²
Total unit area	117,8m²

Total single story area 1649,2m²
Total single story coverage 1649,2m²

DOUBLE STORY UNIT AREA SCHEDULE: X87

Ground floor	36,0m²
First floor	31,9m²
Garage	18,0m²
Total unit area	94,1m²

Total Double story area 8186,7m²
Total double story coverage 4698,0m²

Refuse area 53,8m²
Gate 119,0m²

DEVELOPMENT AREA SCHEDULE:

Site area 20562,4m²
Total FAR 10008,7m²
0.49

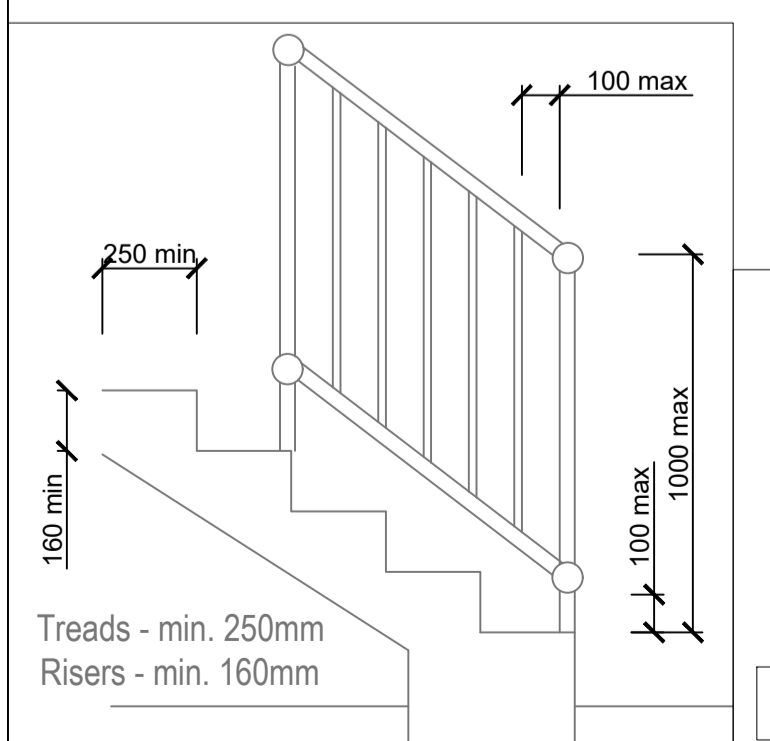
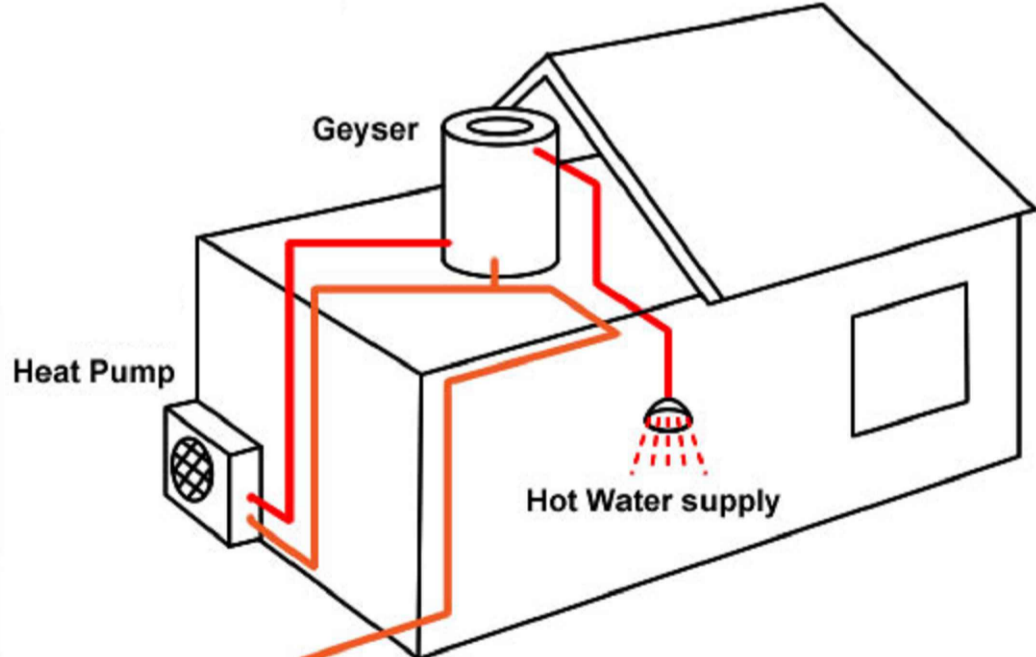
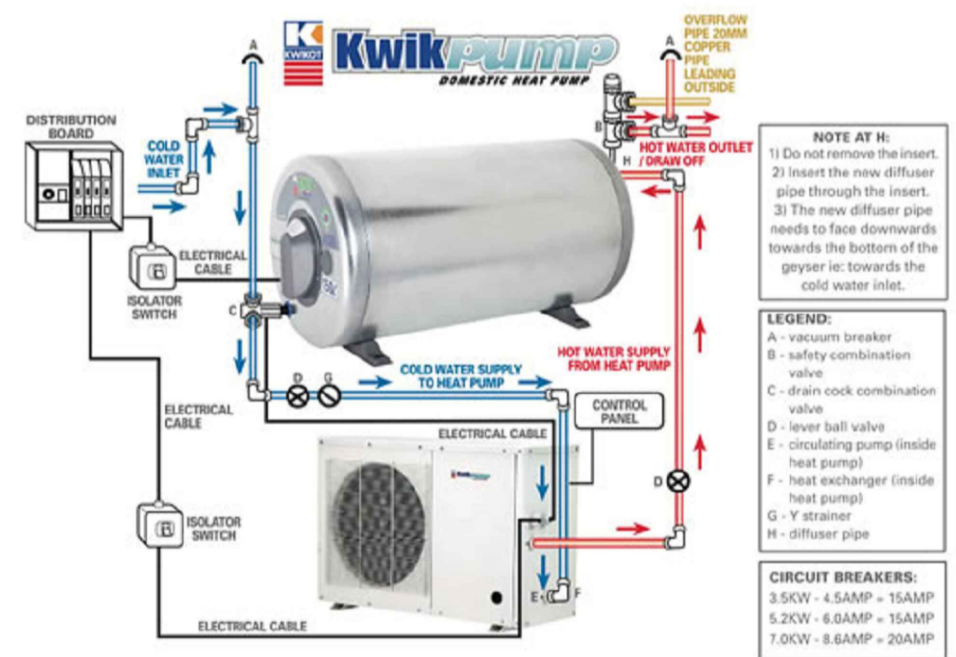
Total Coverage 6520,0m²
31,7%

Communal green area 1273,36m²

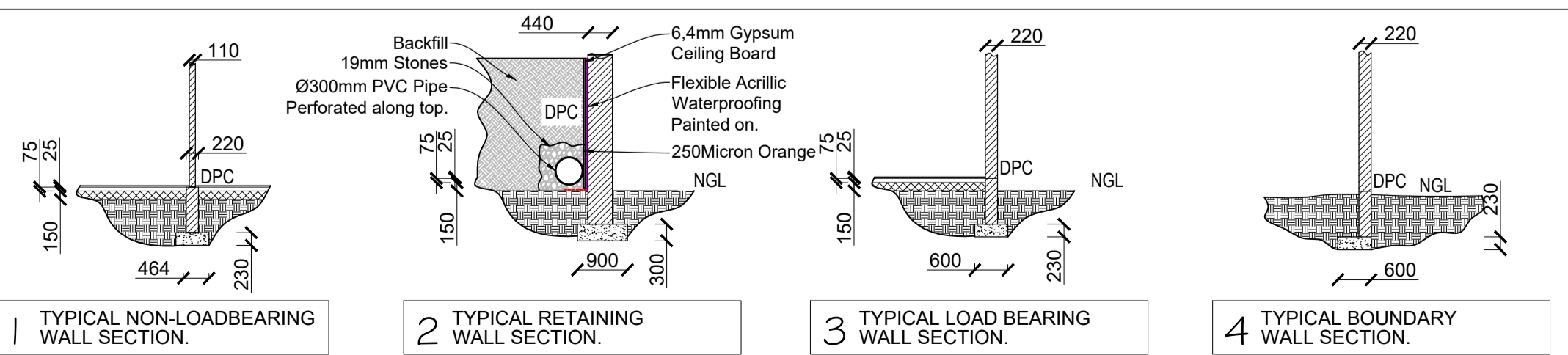
Parking required 150
Parking provided 228
Allowable Height 2 storeys

WINDOW VALUE : 7,9 - ALUMINUM FRAMED SINGLE CLEAR GLASS		WINDOW VALUE : 5,73 - ALUMINUM FRAMED SINGLE LOW E GLASS															
WINDOW SHGC : 0,81 - ALUMINUM FRAMED SINGLE CLEAR GLASS		WINDOW SHGC : 0,66 ALUMINUM FRAMED SINGLE LOW E GLASS															
LEVEL	ID NO.	QTY	SIZE (w x h)	AREA m²	U VALUE	SHGC	ORIENTATION	FACTOR (E)	PROJECTIO N (P)	HEIGHT (H)	CA	CB	CC	HEIGHT (G)	HEATING (SH)	PH	COOLING (SC)
GROUND	W1	1	1190 X 890	1,059	7,9	0,81	SOUTH	1,70	0,20	1,47	0,45	0,39	0,07	0,00	1,00	0,00	1,00
GROUND	W2	6	1490 X 1490	2,22	7,9	0,81	NORTH/SOUTH	0,68	0,00	1,81	0,47	0,41	0,07	0,00	1,00	0,00	1,00
GROUND	W3	4	890 X 890	0,79	7,9	0,81	SOUTH	1,30	0,07	1,32	0,46	0,40	0,08	0,00	1,00	0,00	1,00
GROUND	W4	1	594 X 1790	1,056	7,9	0,81	NORTH	1,30	0,68	1,81	0,47	0,41	0,07	0,00	1,00	0,00	1,00
GROUND	W5	1	1490 X 890	0,71	7,9	0,81	NORTH	1,46	0,06	1,36	0,52	0,47	0,04	0,00	1,00	0,00	1,00
GROUND	W6	1	370 X 1490	0,44	7,9	0,81	NORTH	0,90	0,01	1,01	0,46	0,40	0,08	0,00	1,00	0,00	1,00
GROUND	W7	1	1930 X 1490	2,87	7,9	0,81	NORTH	0,67	1,26	2,55	0,19	1,25	0,010	0,00	1,00	0,00	1,00
GROUND	SD1	1	1790 X 2090	3,75	7,9	0,81	NORTH	0,66	1,26	2,55	0,09	1,63	0,001	0,00	1,00	0,00	1,00

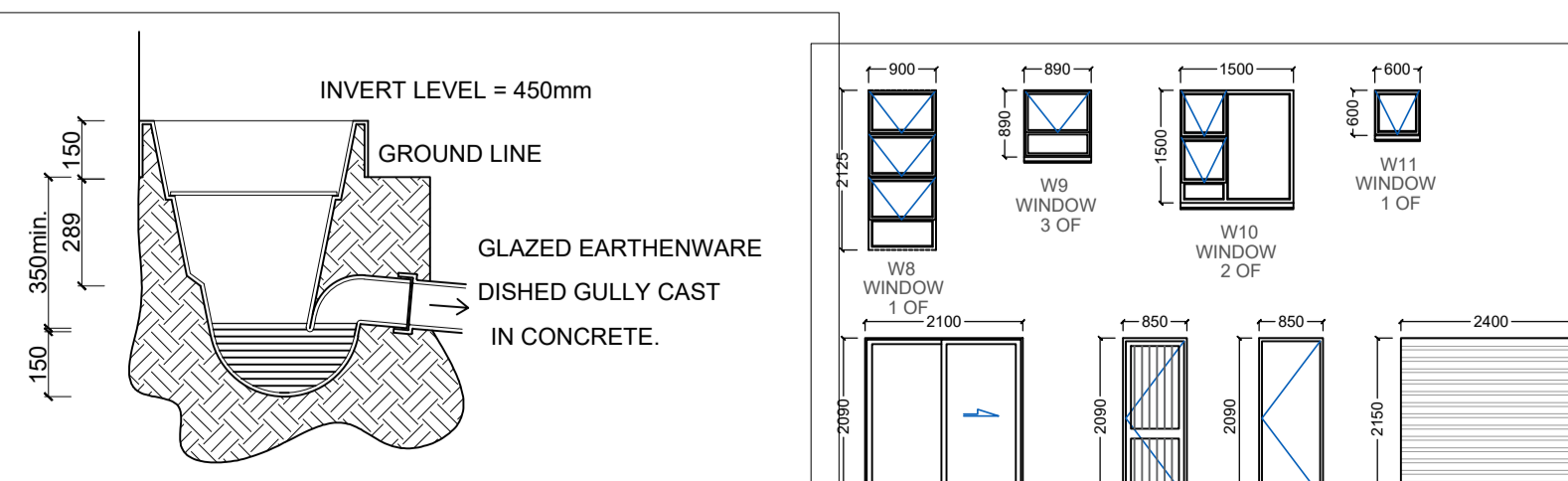
REPORT
CONSTANTS:
CONDUCTANCE (Cn) 1.4
SOLAR HET GAIN (SHGC) 0,12
STORY CONDUCTANCE / SOLAR HEAT GAIN
NET FLOOR AREA OF STOREY / ROOM m² 166m²
FENESTRATION AREA / ROOM m² 33m²
AVAILABLE
CONDUCTANCE (Cn) FOR UNIT - 3,848 - ACCEPTABLE + REFER SANS 204 (4.3.4)
SOLAR HEAT GAIN (SHGC) FOR UNIT - 5,648 - ACCEPTABLE + REFER SANS 204 (4.3.4)
CONCLUSION
CALCULATIONS SHOW THAT THE TOTAL WINDOW AREA OF THE UNIT IS MORE THAN 15% OF THE NET AREA OF THE HOUSE - SANS 204 APPLIES



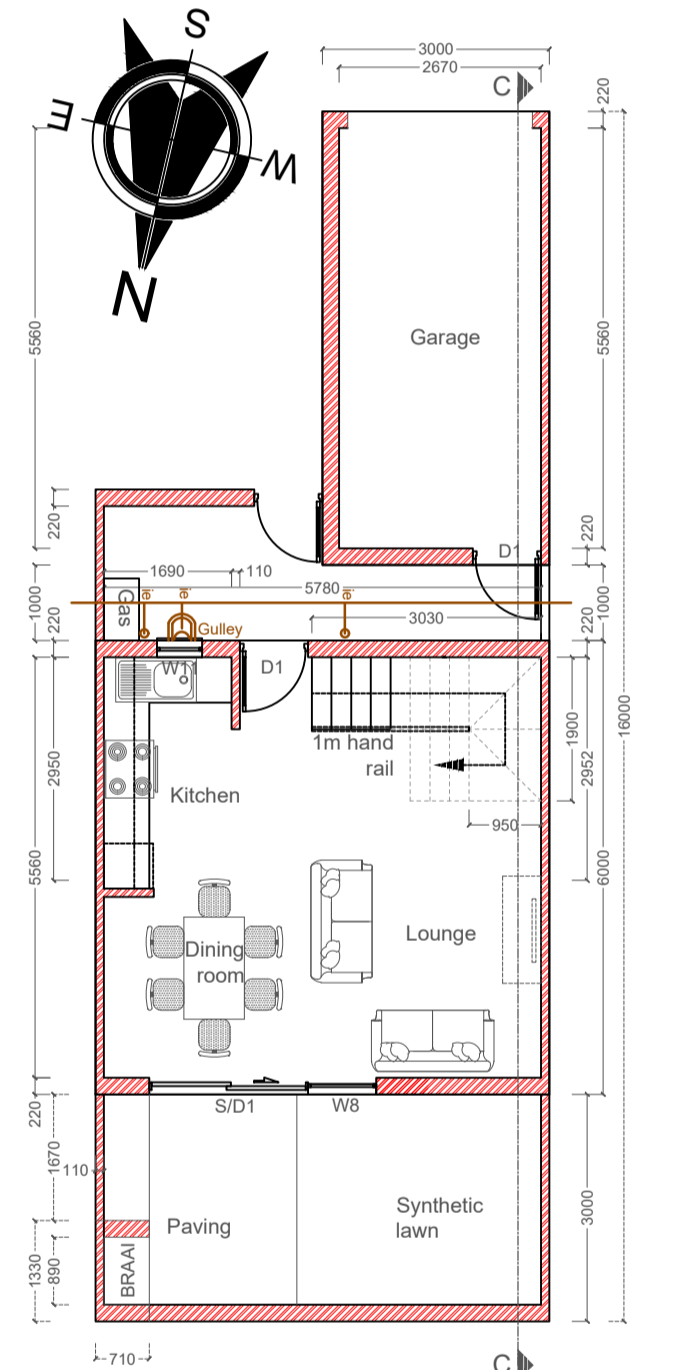
Staircase detail 1:20



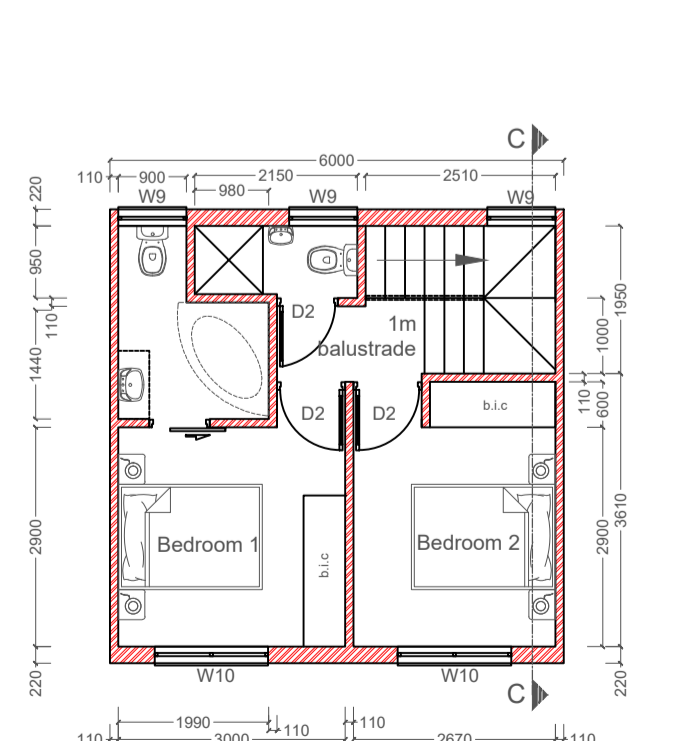
Detail section of walls 1:100



Detail section of gully 1:20



GROUND FLOOR PLAN - DOUBLE STOREY scale 1:100



FIRST FLOOR PLAN - DOUBLE STOREY scale 1:100

NOTES:

- GENERAL:**
- ALL LEVELS, DIMENSIONS AND POSITIONS TO BE CHECKED AND VERIFIED BEFORE ANY WORK IS COMMENCED.
 - ANY ERRORS, DISCREPANCIES OR OMISSIONS IS TO BE REPORTED TO THE ARCHITECT IMMEDIATELY.
 - ALL WORK TO BE IN ACCORDANCE WITH GOOD AND ACCEPTABLE LOCAL BUILDING PRACTICE.
 - FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED DIMENSIONS
 - THESE ARCHITECTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ENGINEERS AND CONSULTANT DRAWING WHERE APPLICABLE.
 - ALL BUILDING BY LAWS, HEALTH AND FIRE REQUIREMENTS TO BE STRICTLY ADHERED TO.
 - THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE CORRECT SETTING OUT OF THE WORKS. ANY DOUBT AS TO THE ACCURACY OF BOUNDARY PEGS OR LINES IS TO BE REPORTED TO THE ARCHITECT IMMEDIATELY.
 - FOUNDATIONS TO BOUNDARY WALLS NOT TO ENCRONCH OVER BOUNDARY LINES.
 - ALL ELECTRICAL AND DRAINAGE WORK IS TO BE EXECUTED BY REGISTERED TRADESMEN.
 - CARE TO BE TAKEN WHEN EXCAVATING FOR NEW WORK. ALL EXIST. PIPES, CABLES ETC. EXPOSED TO BE POINTED OUT TO THE CLIENT AND/OR ARCHITECT, WHO SHALL ADVISE NECESSARY ACTION TO BE TAKEN.
 - THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID ANY DAMAGE WHATSOEVER TO EXISTING BUILDINGS, FENCES AND PEGS.
 - ALL DRAWINGS REMAIN THE PROPERTY OF THE ARCHITECT AND ARE COPYRIGHT PROTECTED IN ACCORDANCE TO THE LAW OF ARCHITECTS.

- DRAINAGE:**
- ALL SOIL PIPES UNDER THE BUILDING OR FOOTING TO BE ENCASED IN CONCRETE OF MIN. 100mm THICK ALL AROUND PIPES.
 - INSPECTION EYES AT ALL BENDS AND JUNCTIONS OF DRAINS WITH MARKED COVERS AT GROUND LEVEL.
 - ALL WASTE PIPES TO BE ACCESSIBLE OVER THE ENTIRE LENGTH.
 - NO DRAINAGE BENDS OR JUNCTIONS IN OR UNDER FLOORS.
 - PROVIDE 'I'S' AT EACH END OF ENCASED DRAIN WHERE SAME PASSES UNDERNEATH THE BUILDING AS NEAR AS POSSIBLE TO THE FOUNDATIONS.
 - RESEALING TRAPS TO ALL WASTE WATER FITTINGS (2 PIPE SYSTEM)
 - WASTE PIPES ON SINGLE PIPE SYSTEM WILL BE FITTED WITH 60mm DEEP SEAL TRAPS AND EACH FITTING WILL BE ANTI-SYPHONED.
 - W.C. SOIL PIPES HAVING A GREATER DEPTH FROM PAN TO PIPE INVERT LVL. THAN 1.20m WILL BE ANTI-SYPHONED.
 - WASTE PIPES UNDER FLOORS TO BE SLEEVED.
 - MIN. FALL OF 100mm PIPES TO BE 1:60 WITH MIN. OF 300mm COVER.
 - WASTE PIPES TO BASINS TO BE MIN. 30mm AND TO ALL OTHER FIXTURES MIN. 40mm.

Drainage note:

Sink and prep bowl	Ø40mm PVC wc	Note
bathtub	Ø110mm PVC	Brass shower traps
bath and shower	Ø30mm PVC	-Anti siphon traps to all waste fittings on the first floor.
wim and dw	Ø40mm PVC	
wt	Ø40mm PVC	

CONSTRUCTION NOTES:

- ROOF CONSTRUCTION**
- Chromadek BR sheeting on 30x30mm S.P.PINE BATTENS @ 340mm c/c.
 - Reds SA PINE PURLING @ 1.2m c/c max.
 - BATTENS ON S21S2 S.P.PINE ROOF TRUSSES (GRADE II) AT 600c.c. attached with galv. wire, built 450mm deep into walls.
 - ROOF SLOPE AT 7° AS SHOWN ON SECTIONS. WALL PLATE 75x30mm.
 - 100mm GUTTERS ON THE ROOF OVERHANGS.

WALLS
ALL INTERIOR WALLS TO BE PLASTERED AND PAINTED.
EXTERIOR COLOUR AS PER OPTION 'A' ON THE COLOUR PALETTE. INTERIOR COLOURS AS DECIDED BY THE OWNER. ALL TILES AS BY THE OWNER.

FLOOR FINISHES
ALL INTERIOR WALLS TO BE PLASTERED AND PAINTED.
EXTERIOR COLOUR AS PER OPTION 'A' ON THE COLOUR PALETTE. INTERIOR COLOURS AS DECIDED BY THE OWNER. ALL TILES AS BY THE OWNER.

FINISHING:
EXTERIOR WALLS TO BE FACE BRICK WITH PLASTERED ACCENTS.
COLOUR - AS PER SCHEDULE

ROOF COLOUR - ASHEN SKY TRP 217 NU-ROOF
BOUNDARY WALLS 220X180MM HIGH WITH STORM WATER OUTLETS. COLOUR TO MATCH EXTERIOR WALLS.

GLAZING AS PER SANS 10400-"A"

1	2
THICKNESS OF GLASS, mm	MAXIMUM SIZE OF GLASS, m²
3	0,75
4	1,5
5	2,1
6	3,2

GLASSING NOTES:

- WINDOWS BIGGER THAN 3.2M² AND SLIDING DOORS SHOULD BE MARKED WITH MARKERS.

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CLIENT SIGNATURE

ARCHITECT SIGNATURE

ENGINEER SIGNATURE

ARCHITECT

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PROJECT: PROPOSED NEW DEVELOPMENT
101@Anemoon

STAND NO.: 3552

TOWNSHIP: HOLDING 71 OF KEMPTONPARK AH X2

DRAWN - JN **SCALE:-** 1:100
DATE:- 03/03/2017 **SHEET:-** A1
CHECKED:- SM

DRAWING TITLE:- DS UNIT LAYOUT PLAN

DRAWING **REV** 0

Project Number