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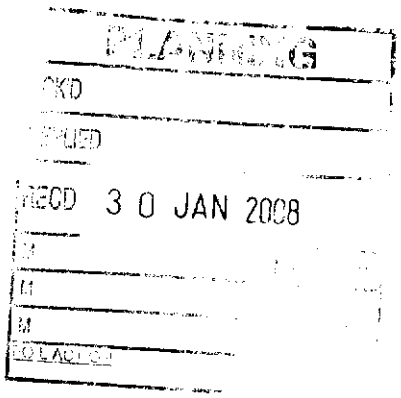


Environmental Assessment
Residential Development
Holland Street
Miles Platting
Manchester

AB acoustics
Unit 8
Laurel Trading Estate
Higginshaw Lane
Royton
Oldham

24 January 2008

Introduction

AB acoustics were commissioned by Chester Developments to undertake an environmental noise survey at a proposed residential development at Holland Street Miles Platting Manchester

An acoustic survey be undertaken to determine the existing noise levels in the area.

It is proposed to build a number of houses on the site , a map of the area is included at the end of the report showing the location of the development and the measuring position.

As can be seen the site in adjacent to existing residential property across Holland Street – on all other sides the site in bounded by open land adjacent to the canal.

The only other premises immediately adjacent to the proposed site is the Navigation Public House.

The survey was undertaken at the times stated in the Results.

In BS 8233:1999 (Sound Insulation and Noise Reduction in Building,Ref.4) design criteria is provided for noise levels inside buildings : summarised these are :

Bedrooms : LAeq = 30 dBA
Lounge : LAeq = 35 dBA

However in this case the following noise criteria have been applied :

Bedrooms (23.00 – 07.00) 30 dB LAeq
Individual Noise Events should not normally exceed 45 dB LAmax in the bedrooms
Living Rooms (07.00 – 23.00) 35 LAeq
Gardens & terraces (07.00-23.00) 50 / 55 Laeq

The above 30 dBA level is acceptable as avoiding sleep disturbance.

The measured external levels are compared to the required internal levels in the Standard to determine the attenuation that must be offered by the structure of the building in order to achieve the required internal levels.

Also it is generally accepted that an open window will achieve an attenuation of 12 dBA to the external noise .

The requirements specified should be regarded as the minimum.

PPG 24 gives guidance to local authorities in England on the use of their planning powers to minimise the adverse impact of noise.

Within PPG 24 various noise sources are considered and noise exposure categories are given relating to the source of noise and the time of day.

As the most significant noise source at the proposed site is considered to be that of road traffic : however as the Navigation Public House is adjacent to the site a BS 4142 assessment was also undertaken and therefore the Mixed Sources Noise Exposure Category is set out below:

Source	Period	Noise Exposure Category			
		A	B	C	D
Mixed Sources	07.00-23.00	<55	55-63	63-72	>72
	23.00-07.00	<45	45-57	57-66	>66

For the night time period, PPG 24 also places a requirement that if in any one hour for the LAmax, slow of several noise events exceeds 82 dB then the site is to be regarded as at least within NEC C.

The BS 4142 assessment method considers the likelihood of noise from specific noise sources provoking complaints from residents of nearby sensitive properties.

The Specific Noise Level is the noise level of the source or collection of sources under investigation and should exclude any other noise sources which may otherwise contribute.

The likelihood of complaints is assessed by comparing the noise level from the specific noise source(s) under investigation, against the typical prevailing background noise levels. The audible characteristics of the specific noise source(s) are are also taken into account ie. If the noise contains any distinct hums, whines or bangs etc. then a correction of +5 dBA should be added to the measured level. This then becomes the Rating Level.

The margin by which the noise level due to the specific noise source under investigation exceeds the background noise level enables the likelihood of complaints to be assessed.

The greater this distance the greater the likelihood of complaints.

A difference of around +10 dB or more indicates that complaints are likely.

A difference of around +5 dB is of marginal significance.

If the rating level is more than 10 dB below the background level this is a positive indication that complaints are unlikely.

Equipment Used and Procedure

The noise levels were measured using a :

Norsonic Type 114 real Time Octave Band Analyser (type 1 instrument)

Calibration was carried out prior to the measurements – and checked afterwards using a ;

Norsonic Acoustic Calibrator.

The measurements were carried out at the locations shown at a height of 1500mm above the ground and away from reflecting surfaces.

The measurements were undertaken at the times stated in the results.

The times of the measurements are not consecutive due the weather conditions – however it is felt that the levels measured at the various times are representative of the existing noise environment at the site.

Results

These are tabulated at the end of the report.

Discussion of Results

As can be seen from the results the noise level varied throughout the day .

The main source of noise was undoubtedly the traffic flow along Holland Street and the adjacent road network : the actual contribution to the overall noise level from the public house was deemed to be insignificant – however this may not always be the case and therefore if a + 5 dB correction factor is added to the measured noise level a Rating Level of **60 dBA** results for the hours 07.00 to 23.00 and **54 dBA** for the hours 23.00 – 07.00.

If average level between the hours 07.00 to 23.00 is taken a noise level of **60dBA** results – **Noise Exposure Category B.**

If the above is repeated for the period 23.00 to 07.00 hrs an average level of **54 dBA** results – **Noise Exposure Category B**

These are the levels that are used to determine the attenuation requirements of the building structure.

In general the construction of the building must be undertaken with great care as even small gaps will reduce the attenuation provided by the structure and even if a complete wall, which may have an attenuation of 50 dBA has a hole in it equivalent to 1/1000 of the wall area the effective attenuation of the wall is limited to a maximum of 30 dBA.

The actual area of the window in the wall affects the internal noise level : the greater the window area the higher the internal noise level . in general a normal double skinned brick wall will have an attenuation of 45/50 dBA ; however this can be reduced by in excess of 5 dBA if the area of the windows is of the order of 25%. The type of glazing then becomes important.

When the windows are open the only important consideration is the area of the opening : if it is 10% of the total area the noise attenuation will be of the order of 12 dBA regardless of the construction of the remaining 90% of the wall.

With regard to the roof , if it is pitched slated or tiled roof with an under ceiling and mineral fibre insulation then an attenuation of the order of 45 dBA should be achieved.

Ventilation of the rooms is also important and depending upon the airflows required and the degree of attenuation then fan-assisted systems may need to be installed with suitable acoustic treatment.

As can be seen from the results in order to achieve a daytime internal noise level of 35 dBA then the building structure must achieve a minimum attenuation of 60 – 35 = **25 dBA**

At nigh time the attenuation required is 54 – 30 = **24 dBA.**

As the above required attenuation is above that of an open window then some form of mechanical ventilation to the habitable rooms will be required.

The above required maximum attenuation of 25 dBA will easily be met with the construction of the external walls and the roof.

Recommendations

As the main source of noise is that due to the traffic flow along Holland Street and the adjacent road network then the attenuation of the glazing must take this into account – as traffic noise contains much of its energy in the low frequency region of the spectrum them the Rtra indicator should be used rather than the more common Rw.

It is considered that all habitable rooms should be fitted with the same glazing

The required attenuation for the glazing of all the rooms therefore should be at least Rtra = 25 dBA – this would be achieved by using, for example, 4 / 12 / 4 mm units or similar.

Obviously these particular rooms will need mechanical ventilation as the attenuation required of the windows is in excess of that achieved by an open window.

The type of ventilation fitted will depend also upon the number of air changes per hour that are required by Building Regulations – this is beyond the scope of this report – however suppliers of suitable acoustically treated ventilation systems can be found on the following web sites;

www.passivent.com

These supply vents that fit into the window header and can be acoustically treated or:

www.vents.com

supply core vents that are wall mounted.

Both these types of vent will be suitable acoustically provided that they meet the minimum attenuation requirements for the attenuation.

It should be remembered that the attenuation of the ventilation system fitted must be at least equal to the attenuation of the windows ie. Rtra = 25 dBA – it is unlikely that the attenuation of the ventilation system will quote Rtra therefore the more usual Rw may have to be used – if this is the case then the quoted attenuation would need to be increase from 25 dBA to around 40 dBA.

External Noise Levels

This covers the noise level in the private amenity areas – gardens etc

As can be seen from the results the averaged measured Laeq for the site was recorded at 55 dBA – this is the upper limit of the noise level that is specified in the World Health Organisation Guidelines for external noise levels.

However this level will only be relevant to the small from gardens / driveways of the residential properties that are proposed to be built on the site of the existing building.

With respect to the gardens of the properties that are proposed to be built on the 'open' area these will be screened from the main noise source (the traffic along Holland Street) by the properties themselves – the amount of attenuation that this screening will afford is a complex problem but is likely to vary between 5 and 10 dBA (reference BS 5228) .

Therefore the external levels will be reduced to the order of 45 / 50 dBA which are deemed to represent below moderate to moderate annoyance with respect to the WHO Guidelines.

Internal Construction

Recommendations

Party Walls – House to House

The construction of this wall is should be 100mm concrete block with a 50mm cavity.

We would recommend that this block be at least 1600 kg / cu m density (the term 7 Newton Block refers to the compressibility of the block rather than the density).

It is important that the joints are fully filled according to the manufacturers instructions and that there are no gaps in the walls – nor should the cavity be bridged.

Both faces of the wall should be wet plastered to at least 12mm – in order to seal any small gaps / holes on the final wall.

At the junction of the party wall with the external wall an acoustic sock should cover the party wall joint.

The internal block work on the external facades to the lounge / bedrooms etc that are separated by the party wall should also be built using the 1600 kg / cu m block in order to reduce the amount of flanking transmission.

If light weight blocks are used on these walls then noise can enter the cavity and travel down it to be radiated into the adjoining room.

The gap at the window reveals of the external wall should be fully sealed with a high density block and DPC not just light weight thermal seals (this applies to all the window reveals in the development – around the whole of the perimeter of the window – not just the sides).

It is noted that this party wall may have electrical sockets / switches mounted onto it – ideally any sockets / switches should be mounted on the other walls.

The holes for the cables must be as small as possible and fully sealed with a high density sealer.

The use of expanding foam to fill any holes must NOT be allowed.

Roger Leach AMIOA

Date : 24 January 2008

Residential Development
Holland Street
Miles Platting
Manchester

Noise measurement results

Measurement location	Time	LAeq
1a	07.00-07.30	55.9
1a	08.00-08.30	57.5
1a	10.10-10.40	56.5
1a	14.05-14.35	59.2
1a	16.15-16.45	56.0
1b	18.10-18.40	52.4
1b	20.00-20.30	48.4
1b	22.15-22.45	47.9

Average **55 (55.1) dBA**

Noise Exposure Category B

			LA max
1a	06.00-06.30	52.8	72.1
1b	23.00-23.30	47.1	68.9
1b	00.00-00.30	41.5	67.8

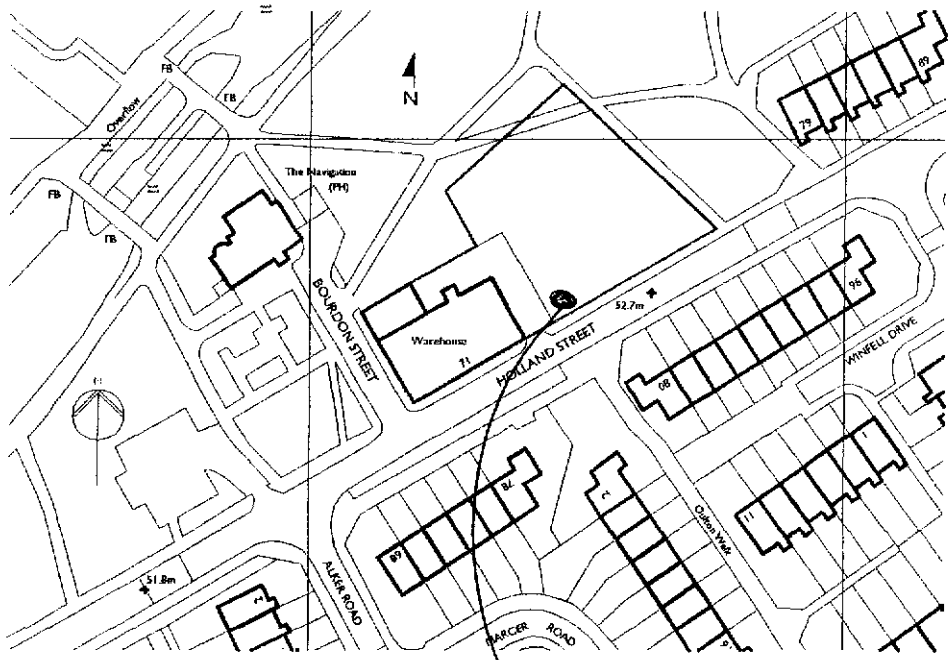
Number of exceedances 0

Average **49 (49.3) dBA**

Noise Exposure Category B

At the time of the measurements the weather was dry with an air temperature varying between 6 and 11 degrees C – the wind was from the West / South West and varied between 0.4 m/sec and 4.3 m/sec.

a. = Friday 11 January 2008
b.= Monday 21 January 2008



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Drawing: Location Plan For Planning

0195 / 02 / 01 A

Client: Consensus

Job: Holland Street
Proposed Residential Scheme

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A	Drawing Template altered	09.07	

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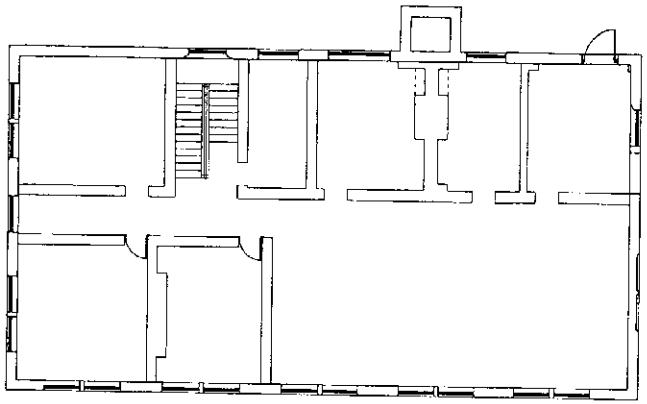
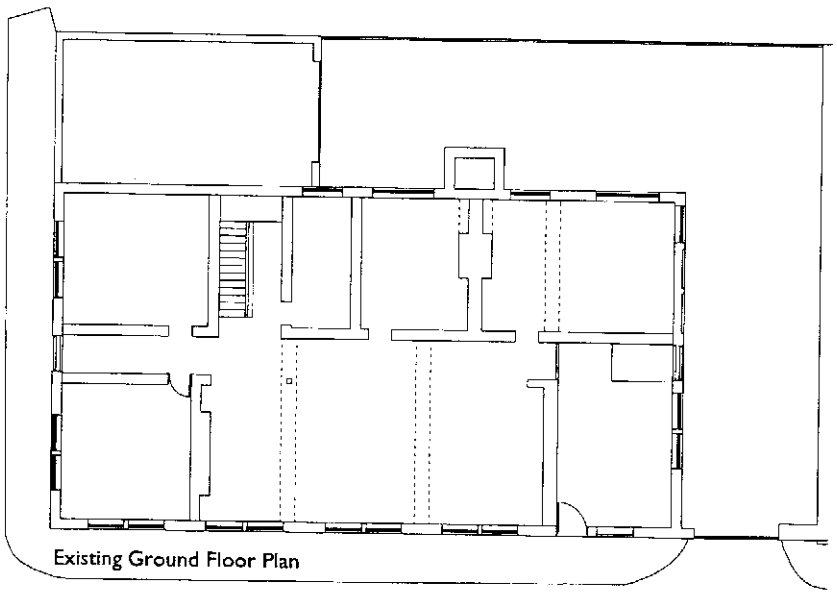
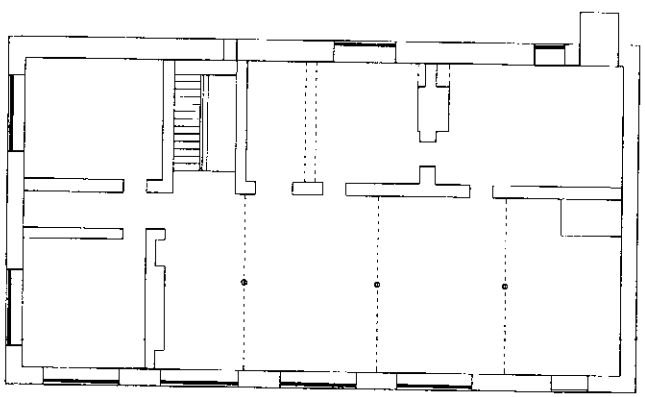


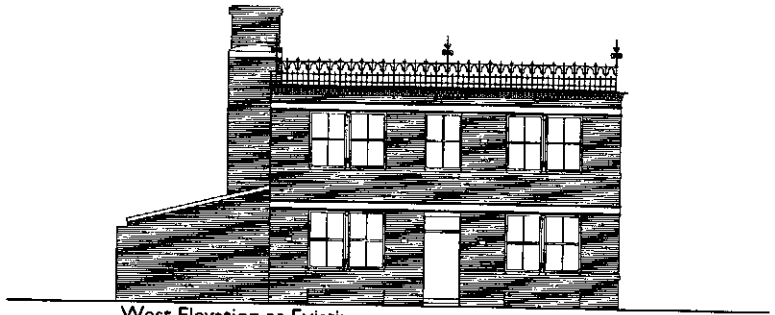
Existing First Floor Plan



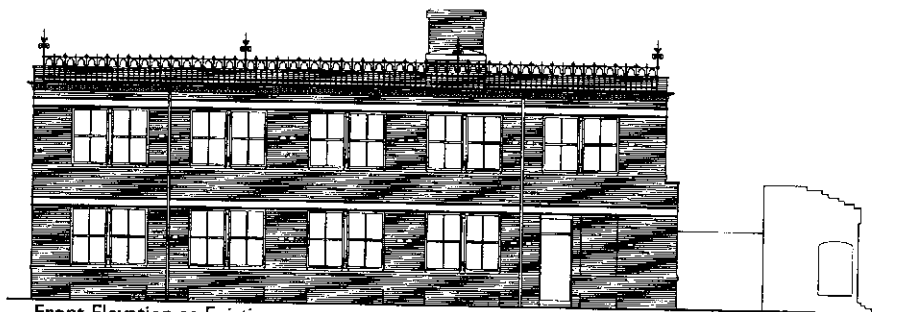
Existing Ground Floor Plan



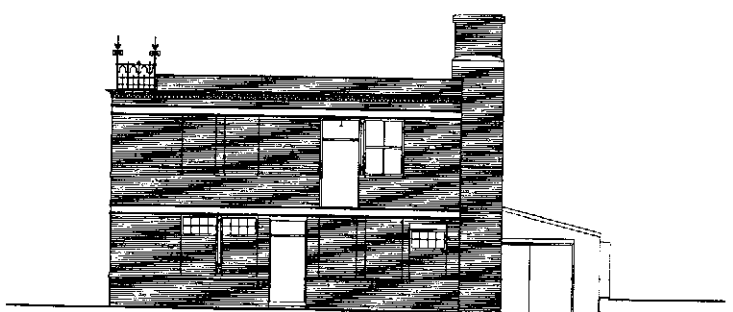
Existing Basement Floor Plan



West Elevation as Existing



Front Elevation as Existing



East Elevation as Existing

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PROJECT
Holland Street
Proposed Residential Scheme

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As Existing

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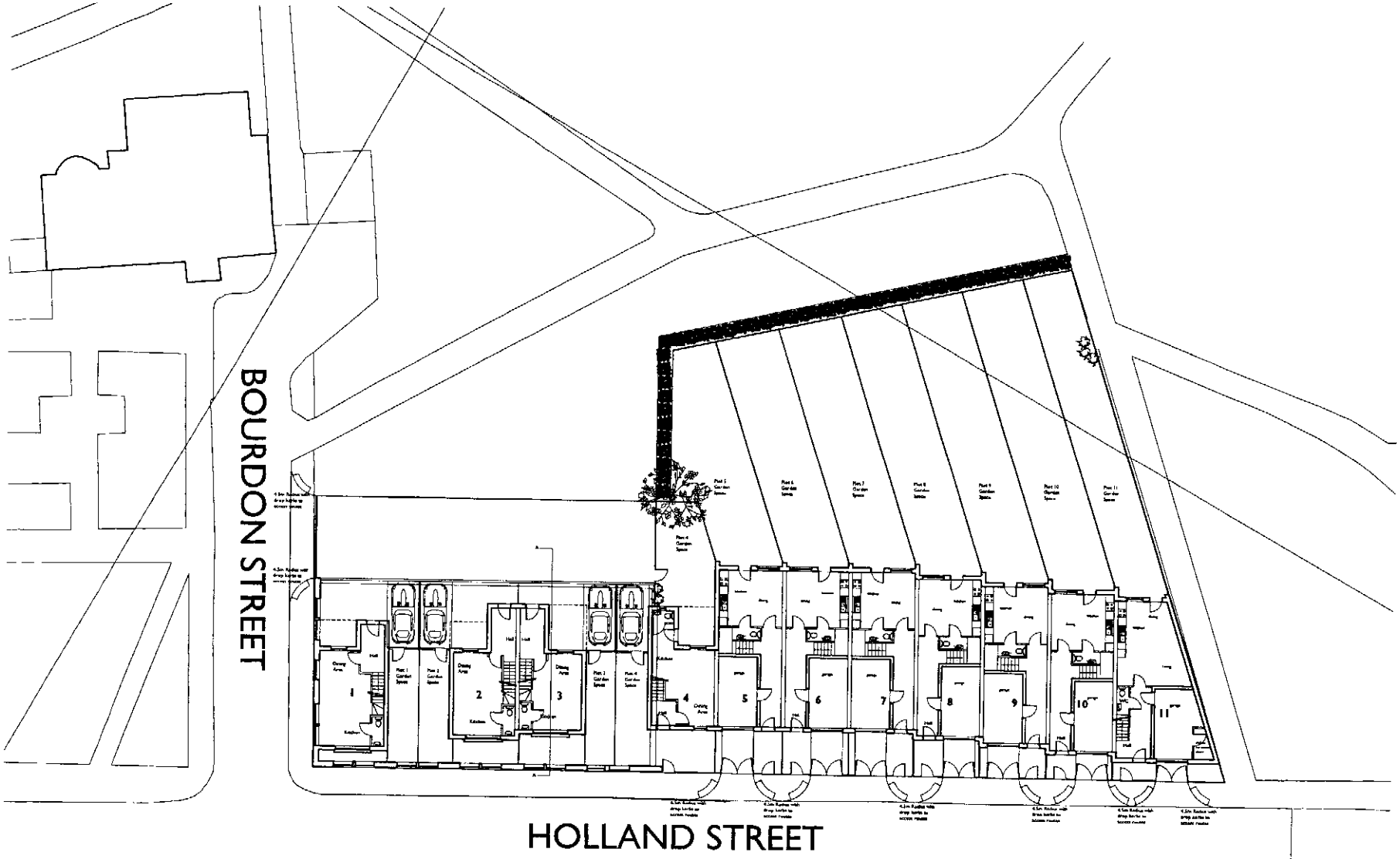

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Holland Street
Proposed Development

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House Plans
Site Plan
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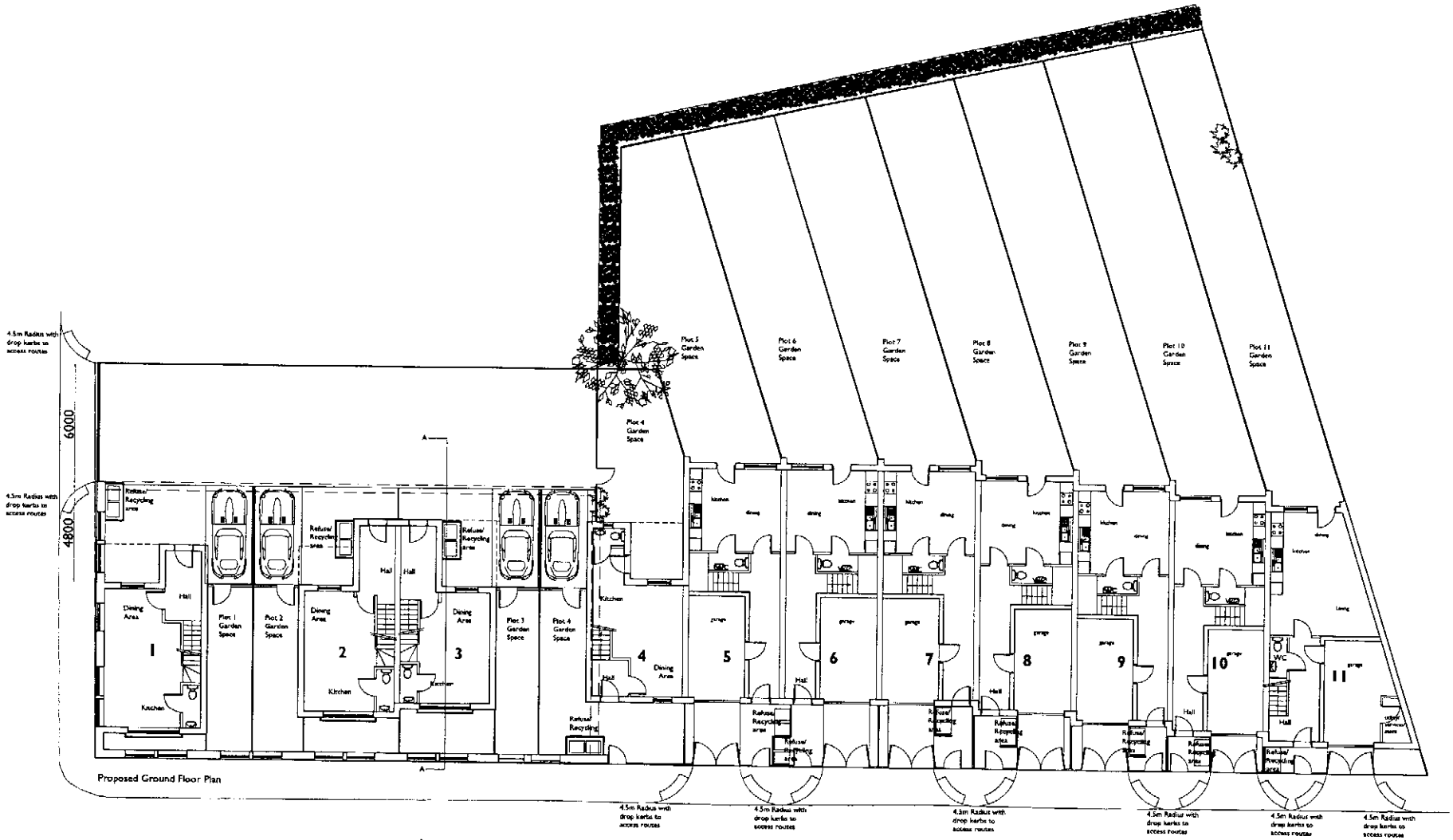
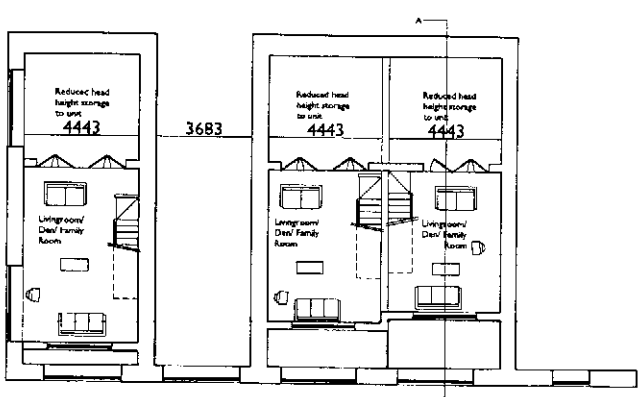


Proposed Ground Floor Plan



Proposed Basement Floor Plan

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PROJECT
Holland Street
Proposed Development

DRAWING TITLE
House Plans
Basement & Ground Layouts
As Proposed

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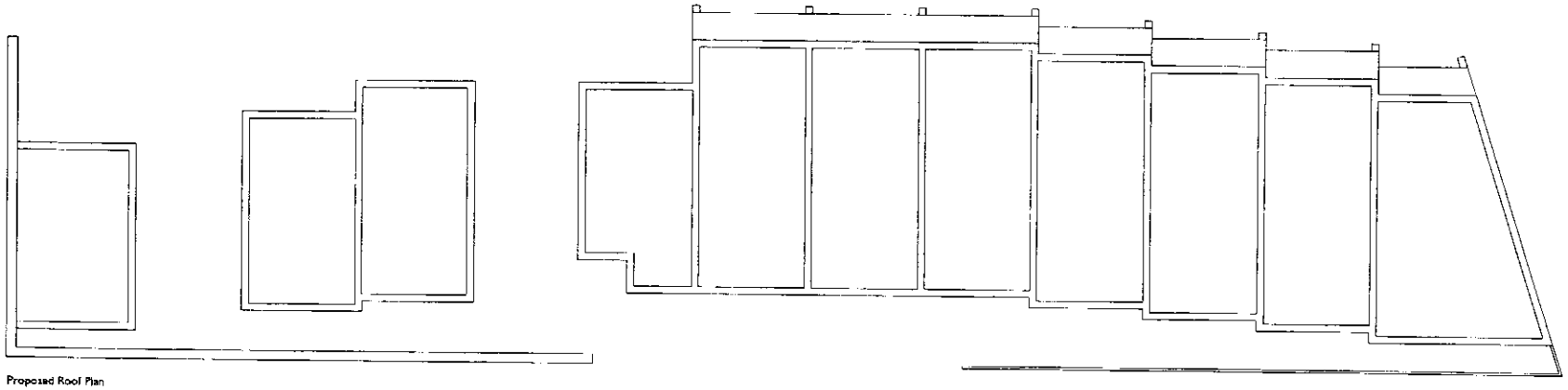
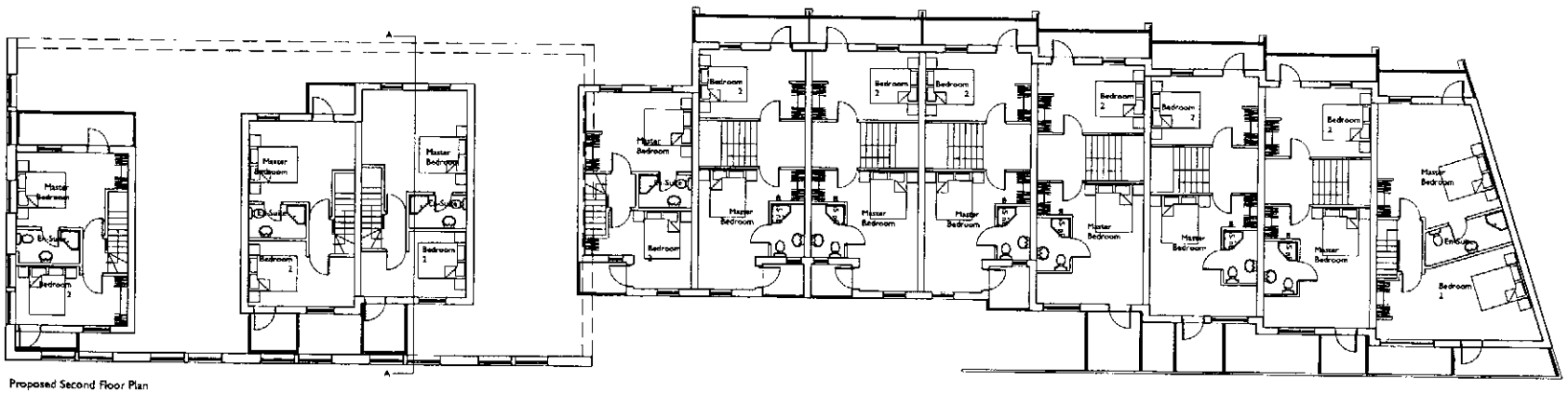


Proposed Roof Plan



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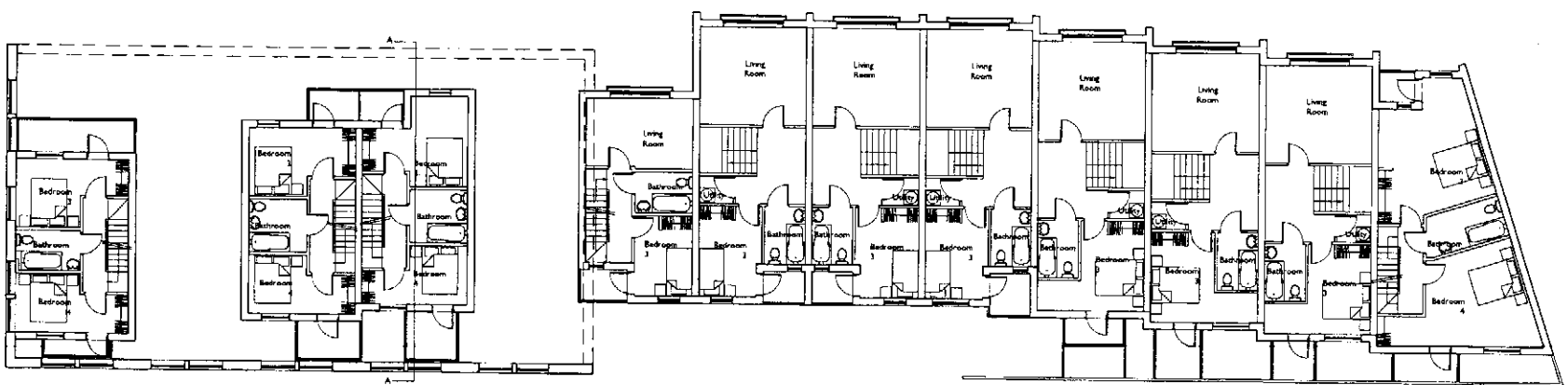

Proposed First Floor Plan

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PROJECT
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Proposed Development

DRAWING TITLE
House Floor Plans
1st, 2nd & Roof Layouts
As Proposed

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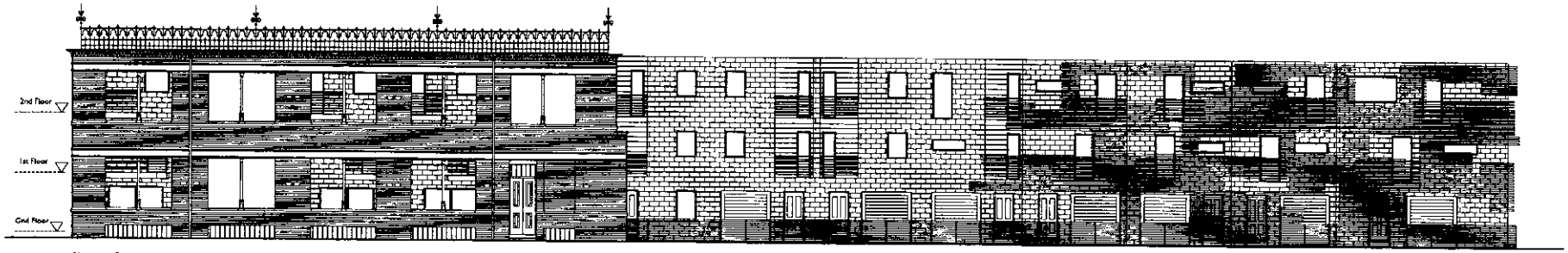
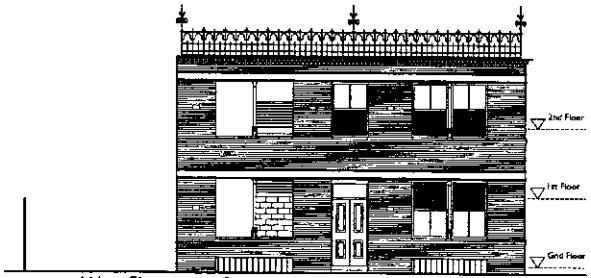
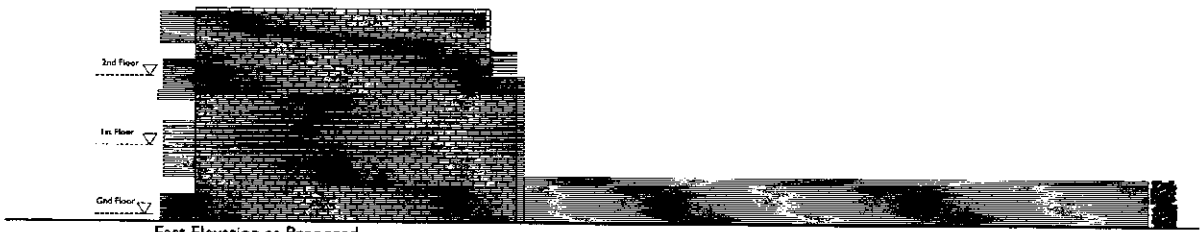
Holland Street Elevation as Proposed 1:200



Front South Elevation as Proposed



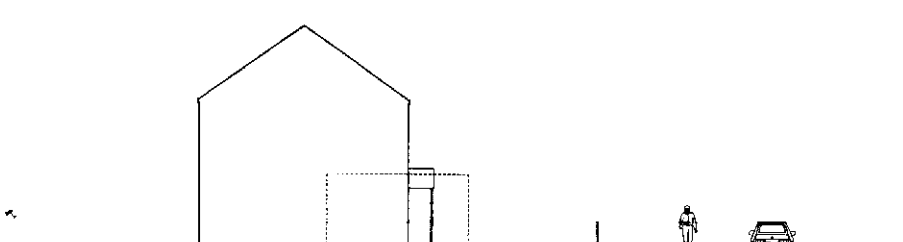
West Elevation as Proposed



East Elevation as Proposed



Rear North Elevation as Proposed



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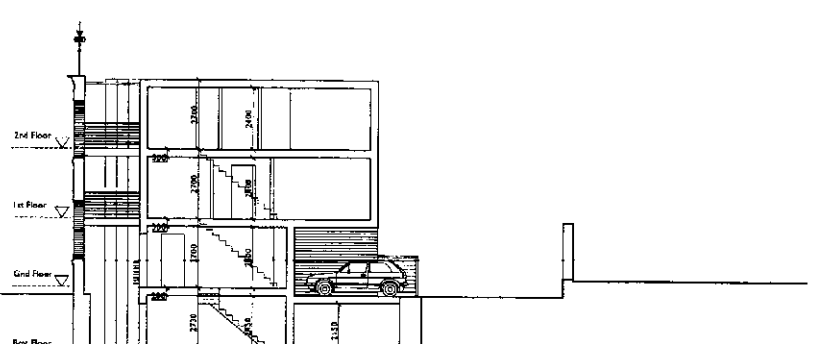

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PROJECT
Holland Street
Proposed Development

DRAWING TITLE
House Elevations
As Proposed

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