

**GFZ Developments Ltd**

**7 Warwick Court**

**Building Services Concept Design Report**

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<b>Project Name</b>	7 Warwick Court	<b>Job Number</b>
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	Signature			

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## 1. Executive Summary

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### 1.1 Introduction

The proposal is to convert an office building into 4 flats comprising one duplex, and three laterals.

The objectives of this document are:-

- To confirm our understanding of the client brief and to explain our proposals at planning stage.
- To secure agreement for us to proceed to the next design stage with these proposals (or alternatives that might be agreed).
- To form the basis of preliminary cost estimating by the Quantity Surveyor and for comparison with base cost model.

### 1.2 Servicing Strategy

- a) The existing intake to the building will be re-used / upgraded to serve all 4No. flats. Each flat will be individually metered and the gas supply will serve a dedicated gas boiler, gas cooker range. Lockable meter boxes will be stacked at the end of the basement Lightwell, accessible by the flat occupants.
- b) A new Utility mains water connection will be provided to a combined break tank and booster set located at basement level, with a meters in the cupboard to serve flat no 1 and a landlords supply for wash-down purposes. Meters for the remainder of Flats will be located in the landlord's riser cupboard on each floor.
- c) The existing 3 phase supply will be re-used / enlarged and terminated in a cupboard in the ground floor entrance lobby.
- d) A new gas fired condensing boiler and hot water storage cylinder (with trace heating or a pumped return) will be provided in each flat. Individual outlet flues will be routed to the rear roof with make-up air inlet in the rear lightwell. Underfloor hot water heating will be provided throughout except stores, with electric underfloor heating and towel rails in Bathroom.
- e) Comfort cooling will be provided to serve main Living Room and Master Bedroom (due to restricted space available for outdoor condenser units). No Humidity control is included.
- f) Bathrooms and WC's are to be provided with continuous mechanical extract with no supply ventilation. Local extract to the rear façade, lightwell or roof for kitchen hoods to be provided where permitted, otherwise recirculating type hoods are to be provided. Extract fan to be provided to the AV cupboard.

- g) No centralised softened water is to be provided
- h) Electrical services to include LED dimming (via a Lutron Homework's system), lighting including five amp outlets, power for kitchen equipment, electric oven, TV/Satellite distribution, IT cabling , wiring for Audio visual system speakers, Video access control system, fire detection and alarm. Also electric UFH to Bathroom and mirror demisters, garden small power supply.
- i) SKY to apartments will be provided from a satellite dish at roof level.
- j) CCTV will be provided in the lightwells and wiring internally for future CCTV in apartment corridors. Intruder alarm systems to be provided in apartments with panic buttons in bedrooms.
- k) Services distribution will be via the floor void and ceiling voids of the flats with pipework, conduit/cables, etc. installed vertically concealed to fittings/outlets.
- l) No BMS system, local control panels for comfort cooling units and underfloor heating with simple 'Sensible heat' integrated control system to allow users to individually set temperature and time periods for each room

### 1.3 Access to Plant and Plant Removal

Mechanical and electrical plant is to be located to ensure adequate maintenance access space is achieved and all equipment can be serviced in accordance with the manufacturer's recommendations. Access panels to plasterboard will be minimised where ever possible. Plant will be mainly located in the Lightwell or basement, and at roof level.

#### Roof level plant

The satellites, AOV, and heat rejection plant will be located on the roof. Considering only access is available via the stair of Flat 4, plant replacement will be from a mobile crane located at the front at pavement level.

#### Plant in the Vault

Plant located in the lightwell or service cupboard is to be removed either via the lightwell stairs to ground, or if heavy equipment lifted using a mobile crane located at the front at pavement level.

## 2. Basis of Design

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### 2.1 Design Codes & Standards

The following codes and standards will be applied to the development:

- Building Regulations and its corresponding Approved Documents
- British Standards and Codes of Practice
- Statutory Undertakings Regulations
- Health & Safety (HSE) Guidance
- CDM Regulations
- All current statutory and other codes
- BRE Design Guidance
- Relevant EN and ISO standards
- BSRIA Application and guidance notes
- CIBSE Guides, Technical Memorandums and Commissioning Codes.
- Water Bylaws/Regulations
- BS EN 12056 Gravity drainage systems inside buildings
- The Institute of Plumbing and Heating Engineers – Plumbing Engineering Services Design Guide
- BS7671 (IEE Wiring Regulations)

## 2.2 Room Services Design Parameters

Room Type	Air Temperature (1), (2)		Humidity Control	Occupancy	Ventilation Rate		Electrical Loads / Heat Gains (w/m <sup>2</sup> )		Noise Criteria (4)	Air Infiltration (Air changes / hr)	Comments
	Summer (Cooling)	Winter (Heating)			Extract	Supply	Lighting	Equipment			
<b>External Ambient</b> (for 'steady state' plant sizing)	30°C DB, 20°C WB	minus 3°C							Refer to section 2.4		External condensers select at 35°C DB ambient Cooling systems shall be capable of operating at temperatures up to 40 °C but with a reduced output
Kitchen	No control	21°C +/- 2°C	None	2 person	30 l/s general extract (Hood details TBA)	Transfer Air	20	1000	NR40 - 45	1,5	Equipment load is for electric cooking
Living Room	22°C +/- 2°C	21°C +/- 2°C	None	6 persons @75% diversity			20	15	NR30	1.5	
Master bedroom	22°C +/- 2°C	21°C +/- 2°C	None	2 persons			15	20	NR25	1.5	
Dining room	22°C +/- 2°C	21°C +/- 2°C	None	4 persons			20	15	NR30	1.5	
Double bedroom	No control	21°C +/- 2°C	None	2 persons	Transfer to Bathroom		15	20	NR25	1.5	
Bathrooms	No control	23°C +/- 2°C	None	-	Continuous extract, 10l/s trickle, 20l/s boost	Transfer Air	25	150	NR35	N/A	Equipment load is for electric UFH
Entrance Hall	No control	19°C +/- 2°C	None	-						2.0	
Study	No control	21°C +/- 2°C	None	2 persons	Transfer to bathroom		20	15	NR25	1.5	
Dressing Room	No control	23°C +/- 2°C	None				15	10	NR30	1.5	
AV Cupboard	No control	No control									Extract grille / fan only
Laundry / Utility	No control	21°C +/- 2°C	None		8 l/s		20	40	NR35	N/A	
Vault store/plant	No control	12°C +/- 2°C	None	-	Nat vent	Nat vent	15	-	NR65	N/A	Equipment load to suit plant equipment
Hallway & Stairs (Landlord areas)	No control	16°C +/- 2°C	None	-	Nat vent	Nat vent			NR35	2.0	

### Notes

1. All temperatures are dry bulb air temperatures, +/-2°C is the allowable measurement tolerance due to control bands and variation around room etc.
2. There will be no humidity control, save for fortuitous de-humidification as a result of air cooling by the fan coil units (i.e. the removal of moisture by condensation forming on cooling coils).
3. Purge Ventilation is to be provided through operable windows sized in accordance with Part F of the Building Regulations.

## 2.3 Environmental Design Parameters

U-values for thermal elements (to comply with Part-L1B 2013) – Residential

Element type	Minimum U-values - W/m <sup>2</sup> K (Renovated Elements)	Minimum U-values - W/m <sup>2</sup> K (New Elements)	Comments
Wall	0.3	0.28	Figure shown are minimum values for 2013 Part L1b.
Floor	0.25	0.22	
Roof	0.18	0.18	
Windows	1.6	1.6	
External Doors	1.8	1.8	

Note that the 'U' values above will be improved under 2013 Part L1B.

## 2.4 Building Services Plant Redundancies

Plant	Redundancy
Boiler	None
Hot water storage & pump	None
Cold water booster Pumps	None
Kitchen extract fan	None
WC extract fan	None

## 2.5 Public Health Services Design Parameters

### 2.5.1 Domestic Cold Water

- Sanitary fittings to be flow restricted to comply with Building Regulations Part G to meet 125 litres per person per day. Standard bath volume up to 165 litres capacity. Dual flush WC of 6/3 litre flushes to be specified by Architect. Flow rates for showers at 9 litres/min, basin at 4 litres/min, kitchen tap at 6 litres/min. Infrastructure to be designed so as to supply additional showers in the future i.e. equivalent to 20 l/min for each shower.
- Pipe velocities 1.50 m/s max.
- Supply Pressure: Approximately 3 Bar at the entry into the apartment but to suit selected sanitary ware.
- Water Hardness: As per Thames Water incoming mains water i.e. approximately 300ppm. A Physical Water conditioner will be installed on the cold feed to the hot water heaters to reduce scale build up.
- Water Storage capacity is 490l, with 22 l per person with ~6 hours of water storage .

### 2.5.2 Domestic Hot Water

- Water Temperature: Assumed 10°C for hot water plant sizing.
- Mixed temperatures to be based upon 65% hot and 35% cold.
- Hot water storage based upon 80% of showers to be used in a one hour period, each shower being used for a duration of 8 minutes.
- Recovery times to be less than half an hour.
- Storage Temperature: 60°C, hot water distribution 55°C.
- Temperature control to all sanitary fittings except kitchen sink.

## 2.6 Acoustic Design Parameters

Please refer to the Acoustic Consultant's Report.

## 2.6.1 Electrical Services Design Parameters

### 2.6.2 Electrical Demand

We anticipate that a new 160 amp TP&N supply will be required for the development.

### 2.6.3 Lighting levels

These are approximate target levels, as there are no specific standards for houses or apartments.

Lounge / dining – 50 Lux approximately (Note LG9 recommendations are for 150 lux, additional lighting via luminaires plugged into 5amp outlets)

Bedrooms – 50 lux approximately (Note LG9 recommendations are for 150 lux, additional lighting via luminaires plugged into 5amp outlets)

Kitchen – 150 lux on worktops

Bathroom – 100 lux

The emergency lighting installation will be designed in compliance with BS EN 5266 Parts 1 and 7.

A maintained emergency lighting system will be provided in the communal areas with integral battery back-up as required.

### 2.6.4 Fire Detection and Alarm System

Fire safety systems will comply with the requirements of the Fire Strategy outlined by the Fire specialist consultant.

The communal areas will include an automatic opening vent at the top of the stairs controlled by an AOV panel. The vent will be activated by a smoke detector in front of the communal lift at each floor level. A fireman's override switch will be provided at Ground floor level.

The system will be designed in accordance with the requirements of BS 5839 Part 6 LD3 ( detection in circulation spaces that form part of the escape route from the apartment) Grade D for the apartments. Approval from the Fire Officer and the Building Control Officer is required.

## 2.7 Design Life

Plant and Equipment Design Life

The building and its component parts will be designed to provide a Service Life in accordance with BS 7543 Table 1, Category 4: Normal Life.

Generally

Mechanical Engineering Systems	15 years
Electrical Engineering Systems	15 - 20 years
Lift Installations	20 years
Control Systems (incl. Fire Alarms, Security)	15 years



## 3. Quality Guide

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### 3.1 Mechanical and Public Health Services

- A. System Boilers – Keston
- B. Underfloor heating – Warmerfloor or Nu-heat
- C. Extract fans – Vent Axia or Nuair
- D. Break tank & booster pump – Dutypoint
- E. VRF – Mitsubishi ( AE200)

### 3.2 Electrical Services

- A. Distribution boards – Crabtree or MEM
- B. Accessories – MK Edge
- C. Accessories – MK Edge
- D. Luminaires – Refer to Architects schedule
- E. Electric underfloor heating – Devi - Linked to heatmiser underfloor heating controls
- F. Apartment Fire alarms – Kidde Slick

## Appendix A – Drawings

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1012034-SK-001A

1012034-SK-002A

1012034-SK-003A

1012034-SK-004A

1012034-SK-005A

1012034-SK-006A