

EXISTING ROOF:
MAIN DWELLING

$$\text{Pyramidal Vol} = V = A_B \frac{h}{3}$$

$$h = 2.04 \text{ m}$$

$$A_B = 32 \text{ m}^2$$

$$\text{Vol} = \underline{21.76 \text{ m}^3}$$



At RIDGE LENGTH

CROSS SECTIONAL AREA TAKEN
FROM COMPUTER MODEL = 12.1 m^2

$$L = 1.17 \text{ m}$$

$$\text{Vol} = 1.17 \text{ m} \times 12.1 \text{ m}^2 = \underline{14.2 \text{ m}^3}$$

$$\text{TOTAL EXC ROOF} = \underline{36 \text{ m}^3}$$



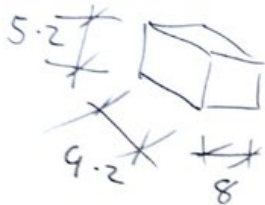
FRONT PORCH SECTION TAKEN FROM
COMPUTER MODEL = 23 m^2

$$L = 2.1 \text{ m}$$

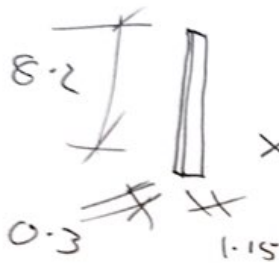
$$\text{Vol} = 2.1 \text{ m} \times 23 \text{ m}^2 = \underline{48.3 \text{ m}^3}$$

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MAIN BODY OF DUGLAKA

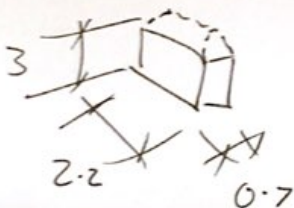


$$Vol = 5.2_m \times 9.2_m \times 8_m = \underline{\underline{382.72 m^3}}$$



$$CHIMNEY Vol = 8.2_m \times 0.3_m \times 1.15_m = 2.829_m^3$$

$$4 No. = \underline{\underline{11.31 m^3}}$$



$$BAYS \times 2 \quad 3_m \times 2.2_m \times 0.7_m = 4.62 m^3$$

$$2 No. = \underline{\underline{9.24 m^3}}$$

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EXG KITCHEN LEAN TO
HALF WIDTH AS SHOWN ON PLANS



SECTIONAL AREA TAKEN FROM
COMPUTER MODEL = 10.6 m^2

$$L = 4.6 \text{ m}$$

$$\text{Vol} = 4.6 \text{ m} \times 10.6 \text{ m}^2 = \underline{\underline{48.76 \text{ m}^3}}$$

EXISTING VOLUME OF MAIN DWELLING

$$= 36 \text{ m}^3 + 48.3 \text{ m}^3 + 382.72 \text{ m}^3 \\ + 11.31 \text{ m}^3 + 9.24 \text{ m}^3 + 48.76 \text{ m}^3$$

$$= \underline{\underline{\underline{536.33 \text{ m}^3}}}$$

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DETACHED GARAGE ROOF

$$\text{PYRAMID} = V = A_B \frac{h}{3}$$

$$h = 1.14 \text{ m}$$

$$A_B = 15.68 \text{ m}^2$$

$$V = 17.87 \text{ m}^3$$

AT RIDGE LENGTH

SECTIONAL AREA FROM

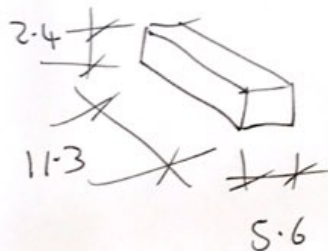
$$\text{COMPUTER MODEL} = 3.89 \text{ m}^2$$

$$L = 5.7 \text{ m}$$

$$V_{OL} = 5.7 \text{ m} \times 3.89 \text{ m}^2 = 22.17 \text{ m}^3$$

MAIN BODY OF GARAGE

$$V_{OL} = 2.4 \times 11.3 \times 5.6 = 151.87 \text{ m}^3$$



EXISTING VOLUME OF
GARAGE

$$\begin{aligned} V_{OL} &= 17.87 \text{ m}^3 + 22.17 \text{ m}^3 + 151.87 \text{ m}^3 \\ &= 191.91 \text{ m}^3 \end{aligned}$$

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TOTAL EXISTING

$$VOL = 536.33 m^3 + 191.91 m^3$$

$$= \underline{\underline{728.24 m^3}}$$

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CALCULATE NEW VOLUME:

$$\text{FRONT PORCH FROM PAGE 1} = \underline{48.3 \text{ m}^3}$$

$$\text{BAYS x2 FROM PAGE 2} = \underline{9.24 \text{ m}^3}$$



CROSS SECTIONAL AREA
TAKEN FROM COMPUTER MODEL = 87.42 m^2

$$L = 14.84 \text{ m}$$

$$\text{VOL} = 14.84 \times 87.42 \text{ m}^2 = \underline{1297.3 \text{ m}^3}$$

$$\text{TOTAL NEW VOL} = 1297.3 \text{ m}^3 + 9.24 \text{ m}^3 + 48.3 \text{ m}^3$$

$$= \underline{\underline{1354.84 \text{ m}^3}}$$

$$\therefore \text{Additional volume} = 1354.84 \text{ m}^3 - 728.24 \text{ m}^3$$

$$= \underline{\underline{626.6 \text{ m}^3}}$$

$$\text{INCREASE IN VOLUME} = \frac{626.6}{728.24} \times 100$$

$$= \underline{\underline{86\% \text{ INCREASE}}}$$

M.