



CCTV CAMERA PLACEMENT

64-camera design & cable budget

Numbered camera layouts, revised scope,
provisional cabling and equipment pricing.

PREPARED FOR

Maxwell Mitchell / Morphonía General Trades

DOCUMENT STATUS

Budget draft | Technical revision R2

BRANDING EDITION

28 October 2026 | Pricing basis: 27 October 2026

Revised camera scope: exactly 64

Prepared for: Maxwell Mitchell / Morphonia General Trades

Prepared by: Mosh Solutions

Basis: latest voice instructions and existing camera-plan IDs. Working deadline: 28 October 2026 morning; confirm submission time.

Area / purpose	Camera IDs	Qty
Parking	P01-P26 (existing allowance)	26
Ground retained	M05-M14	10
Cashiers - one per counter	C01-C12	12
Safe interior	H01	1
Ground passages	N01/N02 next to M11; N03 between former M15/M16	3
Server upstairs above M05	S01 interior; S02 door approach	2
Gallery	L01 door; L02 passage	2
Main basement	B04-B10 and B12	8
TOTAL	No independent perimeter or sub-hall allowance	64

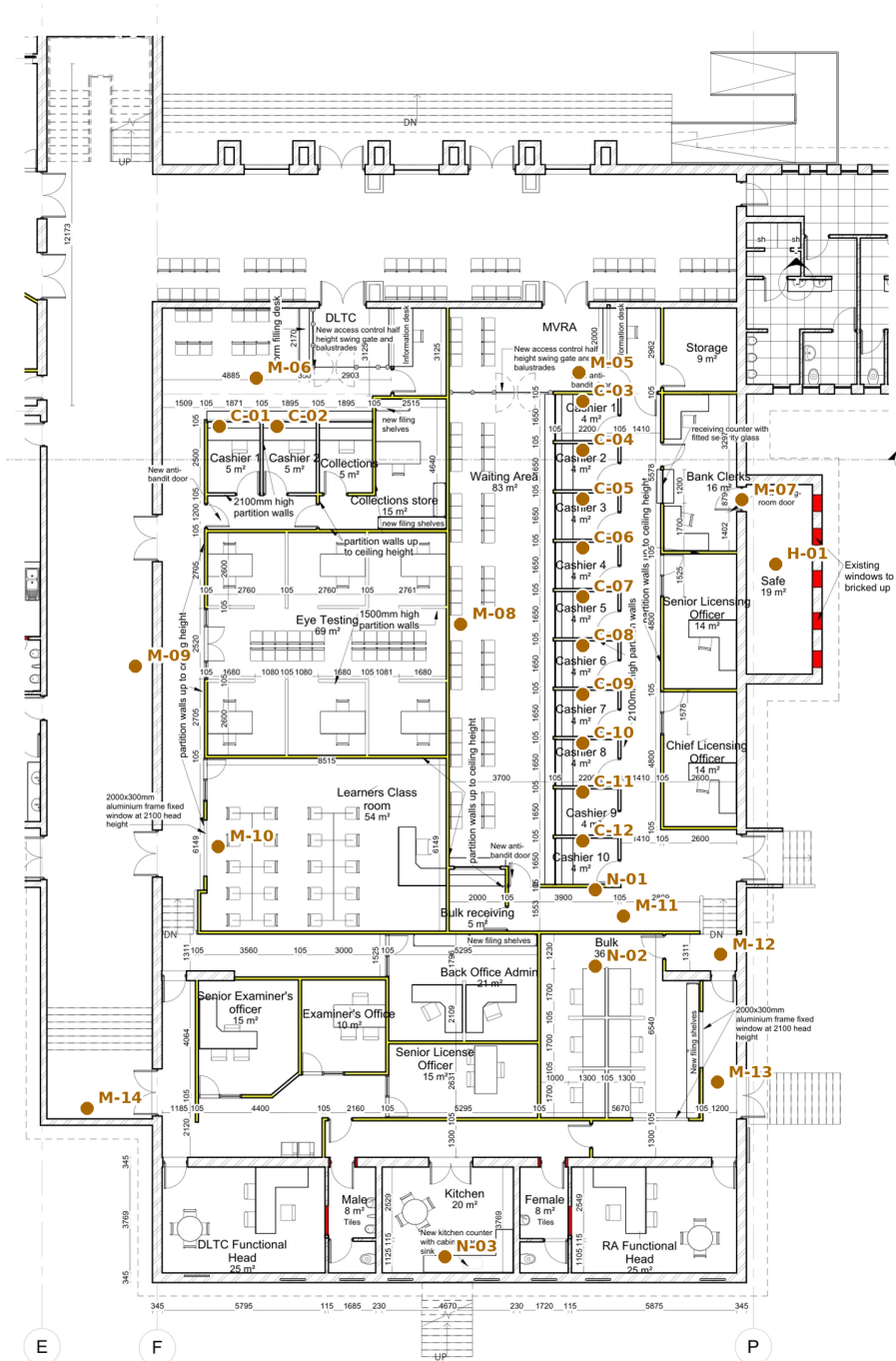
Removed as instructed: M01, M02, M03, M04, M15, M16, B01, B02, B03. Repeated references to M05, M10 and M14 do not add cameras. Six door priorities remain M14, M10, M09, M05, M11 and M12. M06 is retained for the M14-M06 passage.

Provisional selections to confirm: M07/M08 and B04-B09 remain within the cap. B08 is labelled basement room interior pending confirmation of its use; the primary server destination is now first floor above M05. B11, H02, A01-A08 and all separate fence heads are deferred. Do not treat these provisional choices as client-approved placements.

Site identity: drawings identify Pretoria North Hall, ERF R/2274, 518 Brits Road. Confirm the separate Atteridgeville identity. The 64-camera revision supersedes earlier 44/78/136 quantity options for this quotation.

Ground floor - 26 cameras

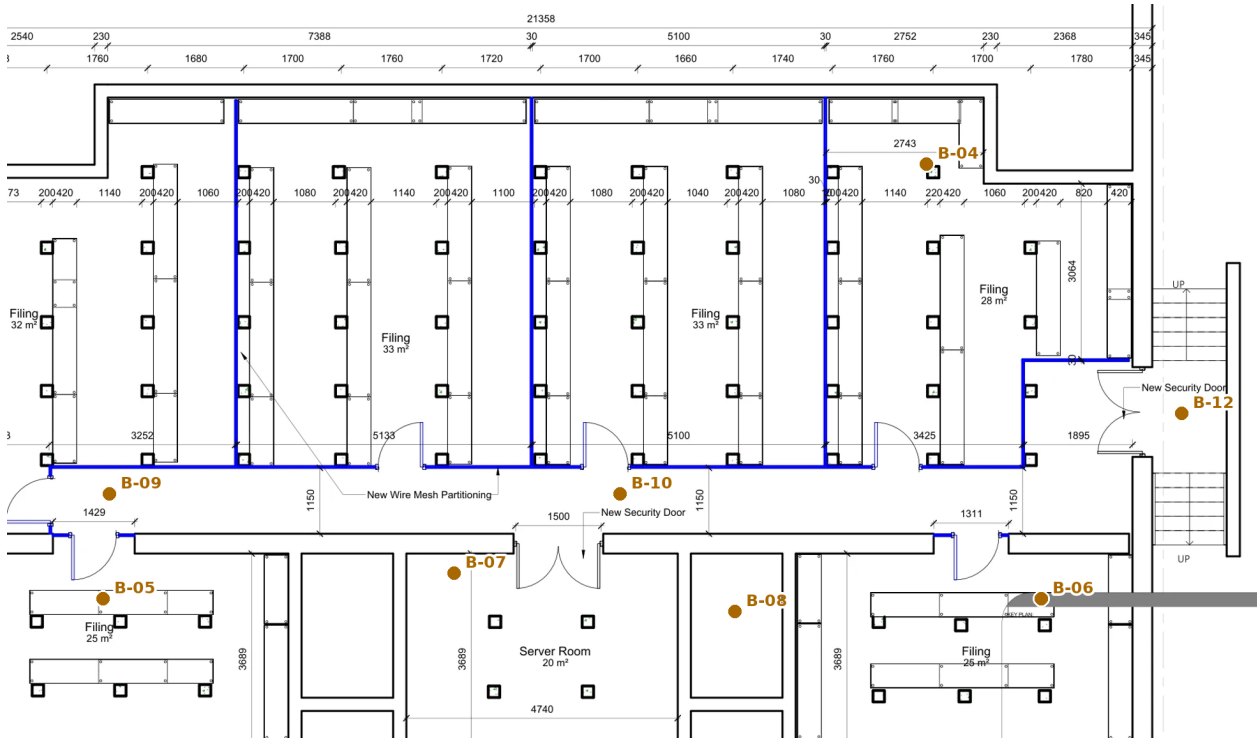
Ten retained M locations, twelve dedicated cashier cameras, the safe interior and three new passage cameras. All additional mounting points and view directions remain preliminary. Only labelled R2 camera markers count. Red rectangular architectural marks are retained as building details.



Cashier IDs C01-C12 are a consolidated transaction-camera sequence; reconcile physical counter numbering on the installed schedule. M05 is the ground-floor reference below the server. It does not replace the upstairs server interior camera.

Main basement - 8 cameras

B01-B03 removed. B10 retains the basement server-room door view; B12 retains the stair/security door view. B07 is a passage/approach view. B08 retains an interior view pending confirmation of basement room use. B04-B06 and B09 are provisional priority selections, not newly confirmed instructions.

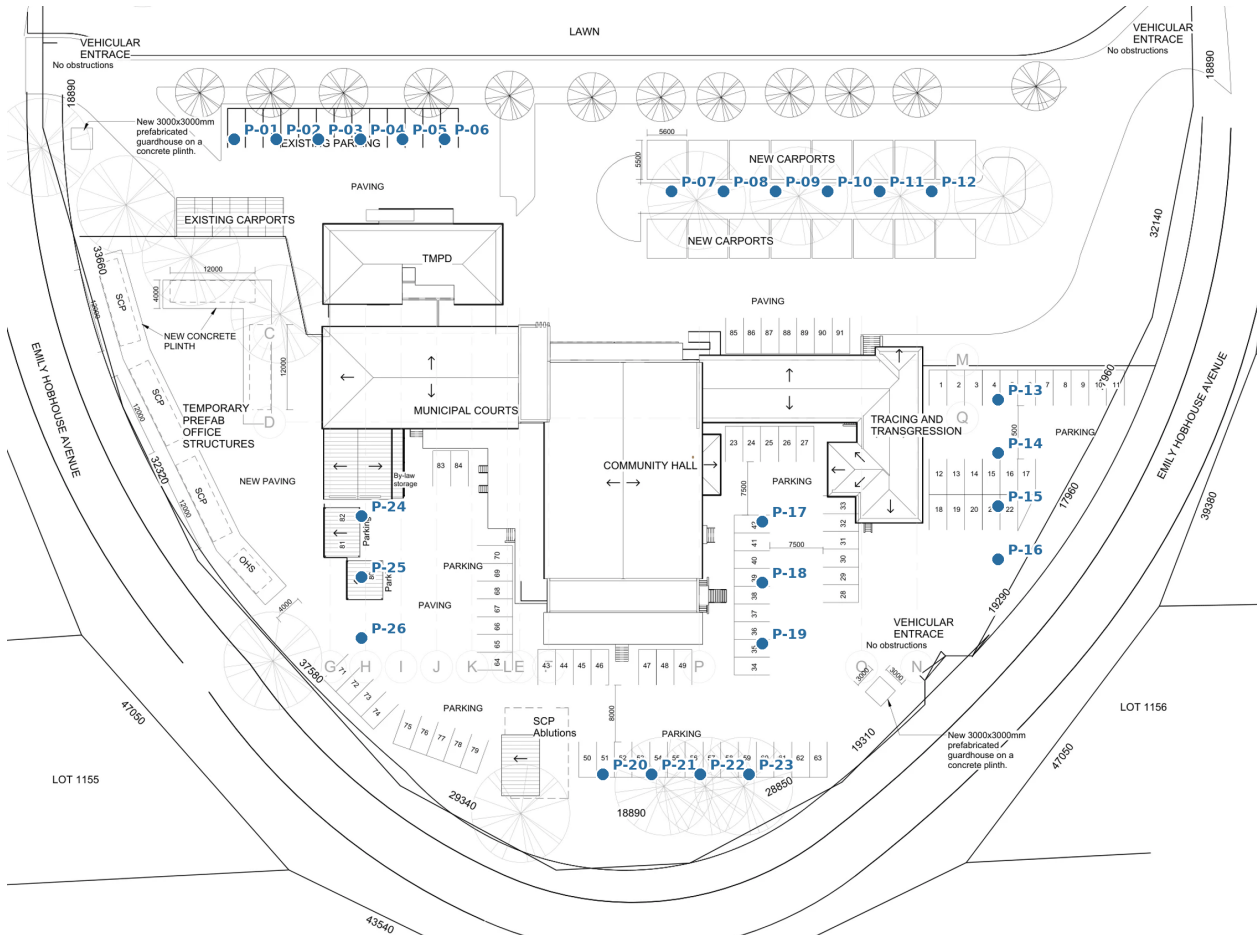


Retained IDs	Purpose
B-04	East filing
B-05	South-west filing
B-06	South-east filing
B-07	Basement server-area passage / approach
B-08	Basement room interior - use of room to confirm
B-09	West corridor
B-10	Basement server-room door view (retain B10)
B-12	Stair/security door

The main server equipment destination for cable estimates is first floor above M05. The basement room labels are historical drawing references and require reconciliation. Sub-hall A cameras are outside this 64-camera revision.

Parking - 26 cameras retained

P01-P26 retain Maxwell's original parking allowance. These positions remain a proposed distribution of that allowance, not confirmed client-marked mounting points. Independent perimeter cameras are deferred; this does not establish complete fence coverage.



Long-run review: P-01 (128 m), P-02 (121 m), P-03 (114 m), P-04 (107 m), P-05 (100 m), P-06 (93 m), P-11 (93 m), P-12 (101 m), P-15 (91 m), P-16 (100 m), P-23 (94 m), P-26 (99 m).

Parking sightlines, lighting, carports and vehicle obstruction require confirmation. 4 mm lenses are budget allowances; verify recorded detail. Do not infer plate recognition from general overview coverage.

Camera supply, markup and installation budget

Camera / commercial option	Qty	Amount
Hikvision DS-2CD2141G0-LIU 2.8 mm at R1,706.00	38	R64,828.00
Hikvision DS-2CD2141G0-LIU 4 mm at R1,788.23	26	R46,493.98
Supplier benchmark subtotal	64	R111,321.98
Supply comparison: cost + 15% markup	64	R128,020.28
Supply comparison: cost + 20% markup	64	R133,586.38

Public supplier benchmarks checked 27 October 2026; supplier VAT included. Exact model revisions, lenses, stock and project discounts require confirmation. The Axis models remain optional substitutions, not extra camera quantities. No full installed-project total is issued.

Working recommendation: 20% equipment markup, pending overhead, warranty and competitive-price review. Keep 15% as a negotiated comparison. Markup and gross margin differ: 15% markup = 13.04% gross margin; 20% markup = 16.67% gross margin. A true 20% gross margin requires cost / 0.80.

VAT handling: comparison figures apply markup to the same VAT-inclusive supplier benchmark basis. Final customer tax treatment must be calculated from Mosh's confirmed tax status and recoverable/nonrecoverable supplier VAT. These amounts are not a tax invoice.

Labour: quote installation, commissioning, testing, training and travel separately. Do not hide unpriced installation costs inside the equipment markup. Once accessory costs arrive, use: equipment selling amount = confirmed equipment and cable supply cost x (1 + markup); then add separately priced labour on a consistent tax basis.

Awaiting prices: NVR/VMS/channel licences and retention/storage; PoE switching and power budgets; fibre/SFPs/distribution cabinets; racks/patch panels; UPS; earthing/surge; poles/mounts; conduit/trunking; cable; civil work; labour; support. Compare in-house and competing supplier costs before approving the selling rate.

Historic quote 08/2609 has a R20,514 arithmetic discrepancy, an unnamed camera SKU, and payment stages totalling 90%. Obtain correction before reuse. Its labour rate is not automatically carried into this revised scope.

Cabling method and route decisions

Provisional home-run allowance: 3514 m for 64 cameras. This is an estimating scenario, not a measured installation quantity or a final network topology.

For each camera: take the rectilinear horizontal distance on the scaled drawing to the assumed server reference, add a floor-rise allowance and 3 m drops, add 20% routing reserve and 3 m service slack, then round up.

Formula: $\text{ceil}[(\text{horizontal} + \text{rise} + 3) \times 1.20 + 3]$.

Assumed rises: parking 6 m; ground 4 m; gallery and server 1 m; basement 8 m. The upstairs server is referenced to M05. Campus/main-hall registration is approximate. Basement and gallery plan centres are assumed aligned for budgeting because cross-floor survey registration and routes are unavailable. These assumptions can materially change the total.

Layer	Qty	Cable allowance m
ground	26	812
server	2	19
gallery	2	69
basement	8	326
campus	26	2288

Network design: 12 estimated home runs exceed a conservative 90 m review trigger, and some exceed ordinary 100 m Ethernet channel limits. Verify actual permanent links and patch leads, PoE budget and copper type. Price local PoE cabinets with fibre uplinks or an engineered extension where needed; do not install an overlength ordinary copper channel. Distributed cabinets will change the cable take-off.

Before purchasing cable: confirm room/riser location; mark actual trays, conduits and external routes; separate indoor/outdoor cable types; validate the first-floor footprint and basement registration; confirm cabinet positions and link tests. Charge cable supply by agreed measured/verified metres and separate termination, testing and installation pricing.

Technical source: <https://help.axis.com/en-us/axis-tu8003-90-w-connectivity-midspan> (manufacturer guidance: Ethernet cable below 100 m from source to load).

Camera and cable register - 1 to 22

All lengths below are unsurveyed allowances to the first-floor server above M05. REVIEW indicates a long-run design check. Model: 2.8 mm for building cameras; 4 mm for parking, subject to lens confirmation.

ID	Floor / target	Horizontal m	Rise m	Cable m
C-01	ground / Cashier 1 - dedicated transaction camera	14.7	4	30
C-02	ground / Cashier 2 - dedicated transaction camera	12.6	4	27
C-03	ground / Cashier 3 - dedicated transaction camera	1.1	4	13
C-04	ground / Cashier 4 - dedicated transaction camera	2.9	4	15
C-05	ground / Cashier 5 - dedicated transaction camera	4.6	4	17
C-06	ground / Cashier 6 - dedicated transaction camera	6.3	4	20
C-07	ground / Cashier 7 - dedicated transaction camera	8.1	4	22
C-08	ground / Cashier 8 - dedicated transaction camera	9.8	4	24
C-09	ground / Cashier 9 - dedicated transaction camera	11.6	4	26
C-10	ground / Cashier 10 - dedicated transaction camera	13.3	4	28
C-11	ground / Cashier 11 - dedicated transaction camera	15.0	4	30
C-12	ground / Cashier 12 - dedicated transaction camera	16.8	4	32
H-01	ground / Safe interior	13.8	4	28
M-05	ground / Door priority - MVRA swing-gate approach	0.0	4	12
M-06	ground / Passage from M14 towards M06	11.7	4	26
M-07	ground / Bank clerks / strong-room approach	10.3	4	24
M-08	ground / Eye-testing / waiting-area transition	13.1	4	28
M-09	ground / Door priority - West passage by eye testing	26.2	4	43
M-10	ground / Door priority - Learners classroom west	29.7	4	47
M-11	ground / Door priority - Bulk-receiving / bulk approach	20.9	4	37
M-12	ground / Door priority - East bulk-area entrance	25.7	4	43
M-13	ground / East bulk-area passage	30.2	4	48

Camera and cable register - 23 to 44

All lengths below are unsurveyed allowances to the first-floor server above M05. REVIEW indicates a long-run design check. Model: 2.8 mm for building cameras; 4 mm for parking, subject to lens confirmation.

ID	Floor / target	Horizontal m	Rise m	Cable m
M-14	ground / Door priority - South-west staff passage	43.6	4	64
N-01	ground / Passage next to M11 - view 1	19.0	4	35
N-02	ground / Passage next to M11 - view 2	21.7	4	38
N-03	ground / South passage between former M15 and M16	36.2	4	55
S-01	server / First-floor server interior above M05	0.0	1	8
S-02	server / First-floor passage approaching server door	1.9	1	11
L-01	gallery / Gallery door / stair approach	28.5	1	43
L-02	gallery / Gallery passage	14.5	1	26
B-04	basement / East filing	8.6	8	27
B-05	basement / South-west filing	29.1	8	52
B-06	basement / South-east filing	18.1	8	38
B-07	basement / Basement server-area passage / approach	22.6	8	44
B-08	basement / Basement room interior - use of room to confirm	18.3	8	39
B-09	basement / West corridor	27.2	8	49
B-10	basement / Basement server-room door view (retain B10)	18.3	8	39
B-12	basement / Stair/security door	17.4	8	38
P-01	campus / North parking · view 1	95.1	6	128 REVIEW
P-02	campus / North parking · view 2	89.1	6	121 REVIEW
P-03	campus / North parking · view 3	83.2	6	114 REVIEW
P-04	campus / North parking · view 4	77.3	6	107 REVIEW
P-05	campus / North parking · view 5	71.4	6	100 REVIEW
P-06	campus / North parking · view 6	65.4	6	93 REVIEW

Camera and cable register - 45 to 64

All lengths below are unsurveyed allowances to the first-floor server above M05. REVIEW indicates a long-run design check. Model: 2.8 mm for building cameras; 4 mm for parking, subject to lens confirmation.

ID	Floor / target	Horizontal m	Rise m	Cable m
P-07	campus / New carports · view 1	36.0	6	57
P-08	campus / New carports · view 2	43.3	6	66
P-09	campus / New carports · view 3	50.6	6	75
P-10	campus / New carports · view 4	58.0	6	84
P-11	campus / New carports · view 5	65.3	6	93 REVIEW
P-12	campus / New carports · view 6	72.6	6	101 REVIEW
P-13	campus / East parking · view 1	52.7	6	78
P-14	campus / East parking · view 2	56.6	6	82
P-15	campus / East parking · view 3	64.1	6	91 REVIEW
P-16	campus / East parking · view 4	71.6	6	100 REVIEW
P-17	campus / Hall east parking · view 1	33.1	6	54
P-18	campus / Hall east parking · view 2	41.7	6	64
P-19	campus / Hall east parking · view 3	50.2	6	75
P-20	campus / South parking · view 1	55.7	6	81
P-21	campus / South parking · view 2	53.1	6	78
P-22	campus / South parking · view 3	59.9	6	86
P-23	campus / South parking · view 4	66.8	6	94 REVIEW
P-24	campus / West parking · view 1	53.3	6	78
P-25	campus / West parking · view 2	61.9	6	89
P-26	campus / West parking · view 3	70.5	6	99 REVIEW

Sources and next actions

Source plans: Site Plan (17 August 2026); Main hall 21-09 (Revision B); Basements 10-09; Main Hall Layout 16-09 (Recommended camera location). Changes and 64-camera cap: Maxwell's latest voice instructions, received 27 October 2026.

hik28: <https://wcctv.co.za/shop/cctv/hikvision/hikvision-ip-all-cameras/hikvision-ip-dome-cameras/4mp-hikvision-ip-dome-cameras/4mp-hikvision-ip-fixed-dome-cameras/ds-2cd2141g0-liu-hikvision-4mp-2-8mm-fixed-dome-network-camera-30m-ir-120db-wdr-rj45-10-100-mbps-self-adaptive-ethernet-port-built-in-mic-ip67-poe-dori-distances-for-humans-detect-63m-obs/>

hik4: <https://wcctv.co.za/product-category/cctv/hikvision/hikvision-ip-all-cameras/hikvision-ip-dome-cameras/4mp-hikvision-ip-dome-cameras/4mp-hikvision-ip-fixed-dome-cameras/>

axis8: <https://wcctv.co.za/shop/cctv/axis/axis-dome-cameras/q3548-lve-axis-8mp-ai-powered-dome-camera-6-3mm-13mm-varifocal-lens-120db-wdr-digital-ptz-ip66-ik10-poe-rj45-10-100-1000-mbps-base-t-base-tx-network-60m-ir-micro-sd-micro-sdhc/>

axis4tele: <https://wcctv.co.za/shop/cctv/axis/axis-dome-cameras/q3546-lve-axis-4mp-ai-powered-dome-camera-13mm-51mm-varifocal-lens-120db-wdr-digital-ptz-ip66-ik10-poe-rj45-10-100-1000-mbps-base-t-base-tx-60m-ir-micro-sd-micro-sdhc-micro-sdx/>

Next actions: confirm the provisional M07/M08 and B04-B09 priorities; reconcile basement room usage; establish actual upstairs room and riser; receive accessory comparison prices; approve markup and labour approach; issue a supplier-confirmed quotation with tax treatment, delivery, validity, warranty and complete payment stages.

Website: <https://mosh-tshwane-security-planner.choicekoala9.chatgpt.site/> - interactive consolidated model, numbered plans, full cable register and markup worksheet. No final compliance approval, verified image coverage or site survey is implied.