A garden at the heart of four private wings

Estimated from the supplied SketchUp view. One storey, connected galleries and twin garages.



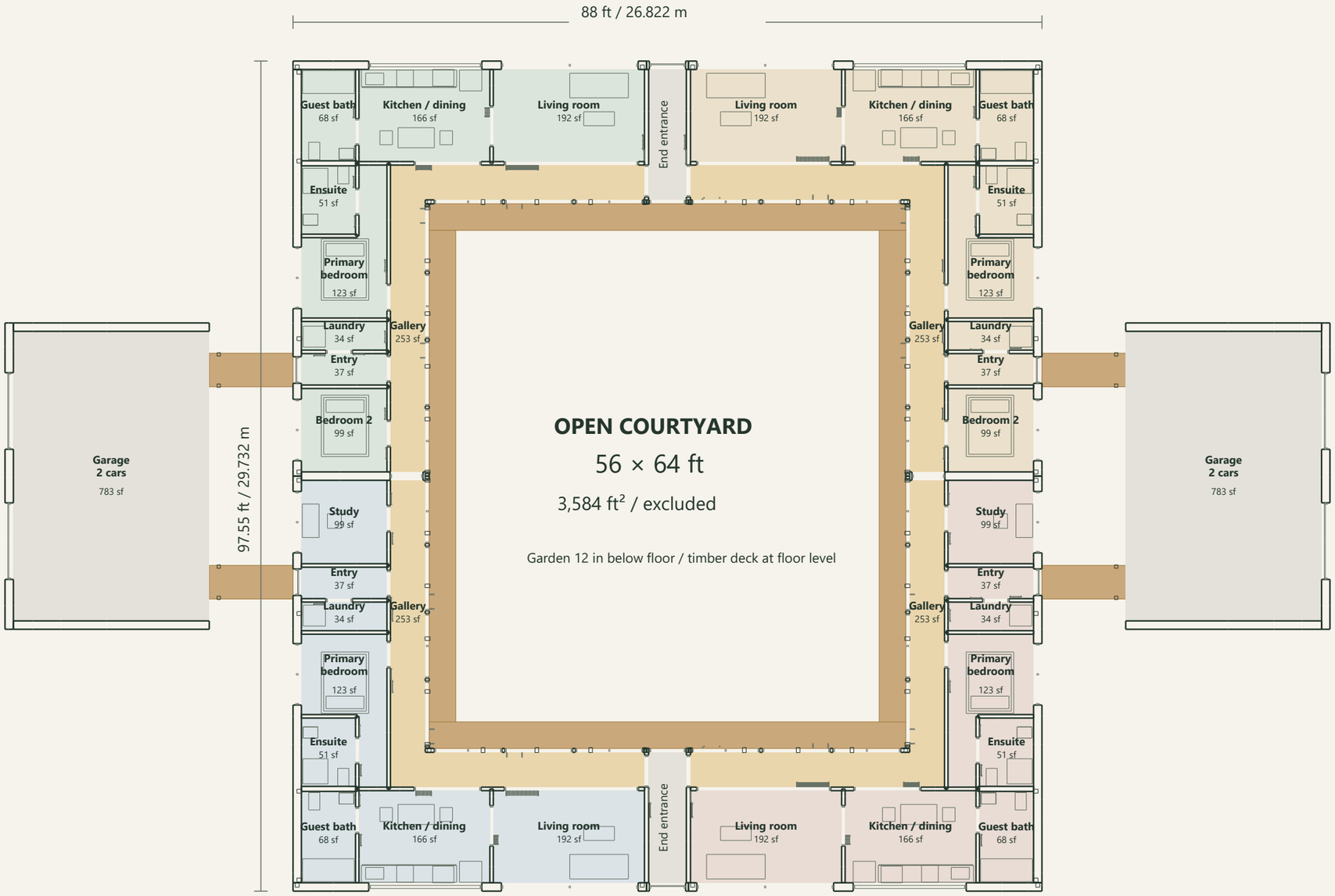
5,000 ft² enclosed

56 × 64 ft open courtyard

Two 24 × 36 ft garages

01 / Proposed floor plan

Model-derived plan. Dimensions below describe this proposal, not measurements recovered from the SketchUp file.



AREA ACCOUNTING

Residential gross	**5,000 ft²**
Each quadrant[1]	**1,250 ft²**
Courtyard / open	**3,584 ft²**
Each garage	**864 ft²**
Both garages	**1,728 ft²**

Gross residential area includes walls, indoor galleries and the central end entrances. Garages, courtyard and roof overhangs are excluded.

1. Equal quadrant allocation includes half of the shared end entrance at that end. Named net room areas are smaller than gross floor area.

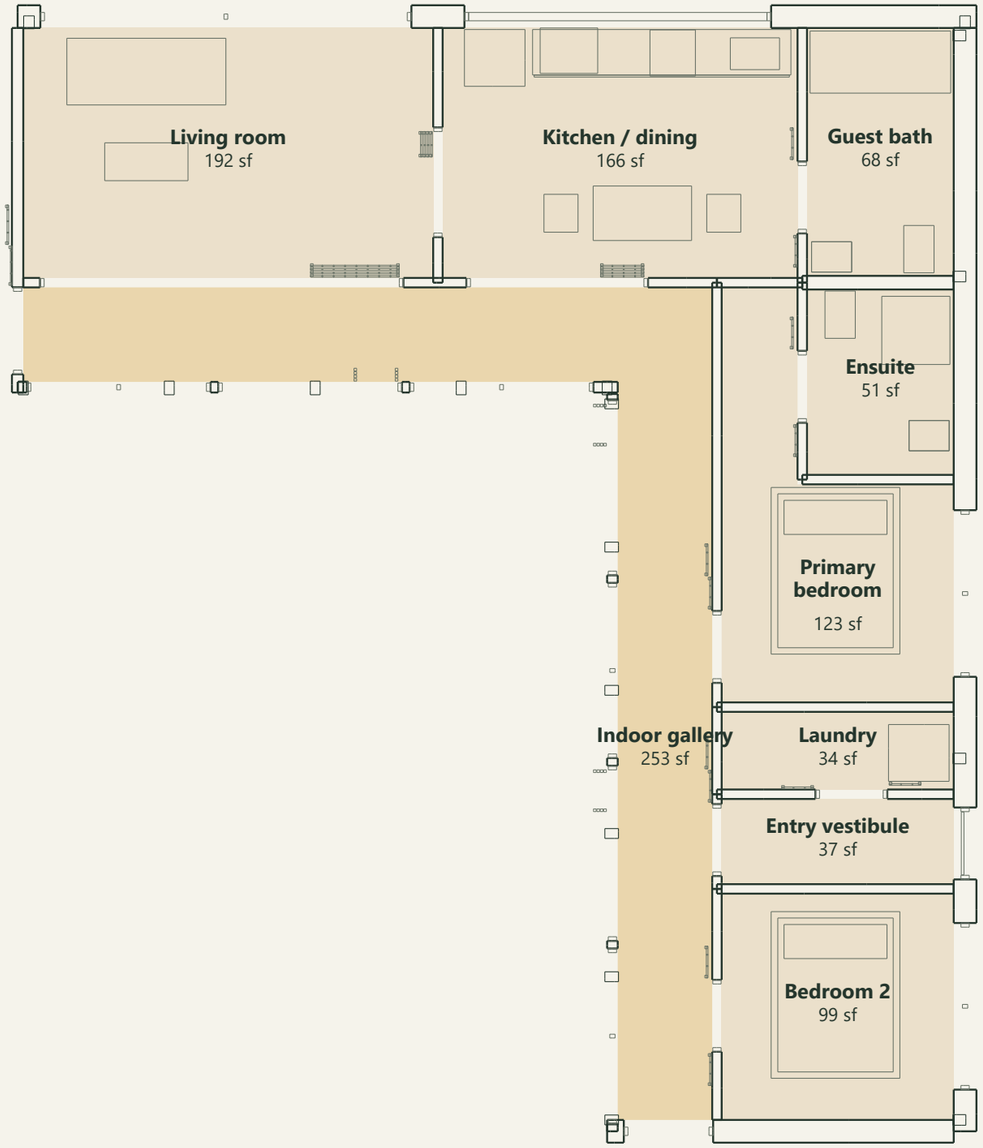
Central end entrances are shared. North is a drawing convention; site orientation is not known.

Reference proportions and room arrangement are interpreted. Furniture is dimensioned. Revised ensuite and bedroom clearances still need final code review.

Cut at +1.05 m. Full room and element schedules supplied separately.

02 / North-east quadrant

Expanded rooms within the 5,000 ft² residential target. Room areas shown are net.



ROOM KEY

NE-01	Living room	192 sf
NE-02	Kitchen / dining	166 sf
NE-03	Bedroom 2	99 sf
NE-04	Garage service vestibule	37 sf
NE-05	Utility / laundry	34 sf
NE-06	Primary bedroom	123 sf
NE-07	Primary ensuite	51 sf
NE-08	Guest bathroom	68 sf
NE-09	Indoor gallery	253 sf

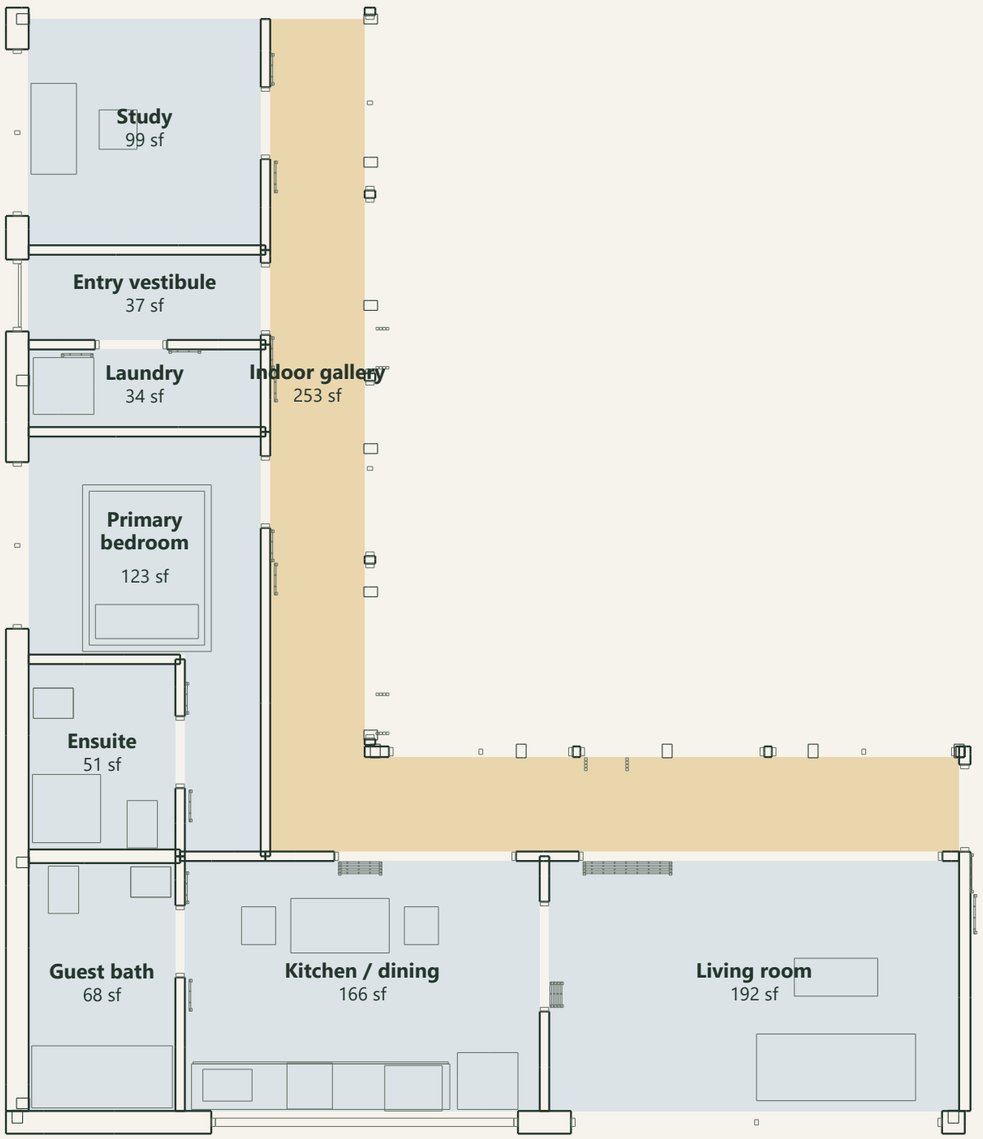
The primary ensuite opens directly from the primary bedroom. Its wet wall aligns with the guest bathroom; the kitchen is beside that wet area, with laundry along the outer service strip.

The side vestibule links the garage and gallery. Both end entrances also reach the gallery. Future independent occupancy still needs a coordinated separation and services design.

Dimensioned queen beds, sofas, desks and dining sets fit within the room boundaries. Primary bed side paths are about 653/711 mm; foot clearance is about 638 mm. Accessibility and final product clearances still require review.

03 / South-west quadrant

Expanded rooms within the 5,000 ft² residential target. Room areas shown are net.



ROOM KEY

SW-01	Living room	192 sf
SW-02	Kitchen / dining	166 sf
SW-03	Study	99 sf
SW-04	Garage service vestibule	37 sf
SW-05	Utility / laundry	34 sf
SW-06	Primary bedroom	123 sf
SW-07	Primary ensuite	51 sf
SW-08	Guest bathroom	68 sf
SW-09	Indoor gallery	253 sf

The primary ensuite opens directly from the primary bedroom. Its wet wall aligns with the guest bathroom; the kitchen is beside that wet area, with laundry along the outer service strip.

The side vestibule links the garage and gallery. Both end entrances also reach the gallery. Future independent occupancy still needs a coordinated separation and services design.

Dimensioned queen beds, sofas, desks and dining sets fit within the room boundaries. Primary bed side paths are about 653/711 mm; foot clearance is about 638 mm. Accessibility and final product clearances still require review.

04 / Garden courtyard

One tree, garden 12 inches below the house, narrow timber engawa and two 6-inch steps.



05 / Indoor engawa

Glazed circulation, oiled oak flooring, timber transoms and warm lantern light.



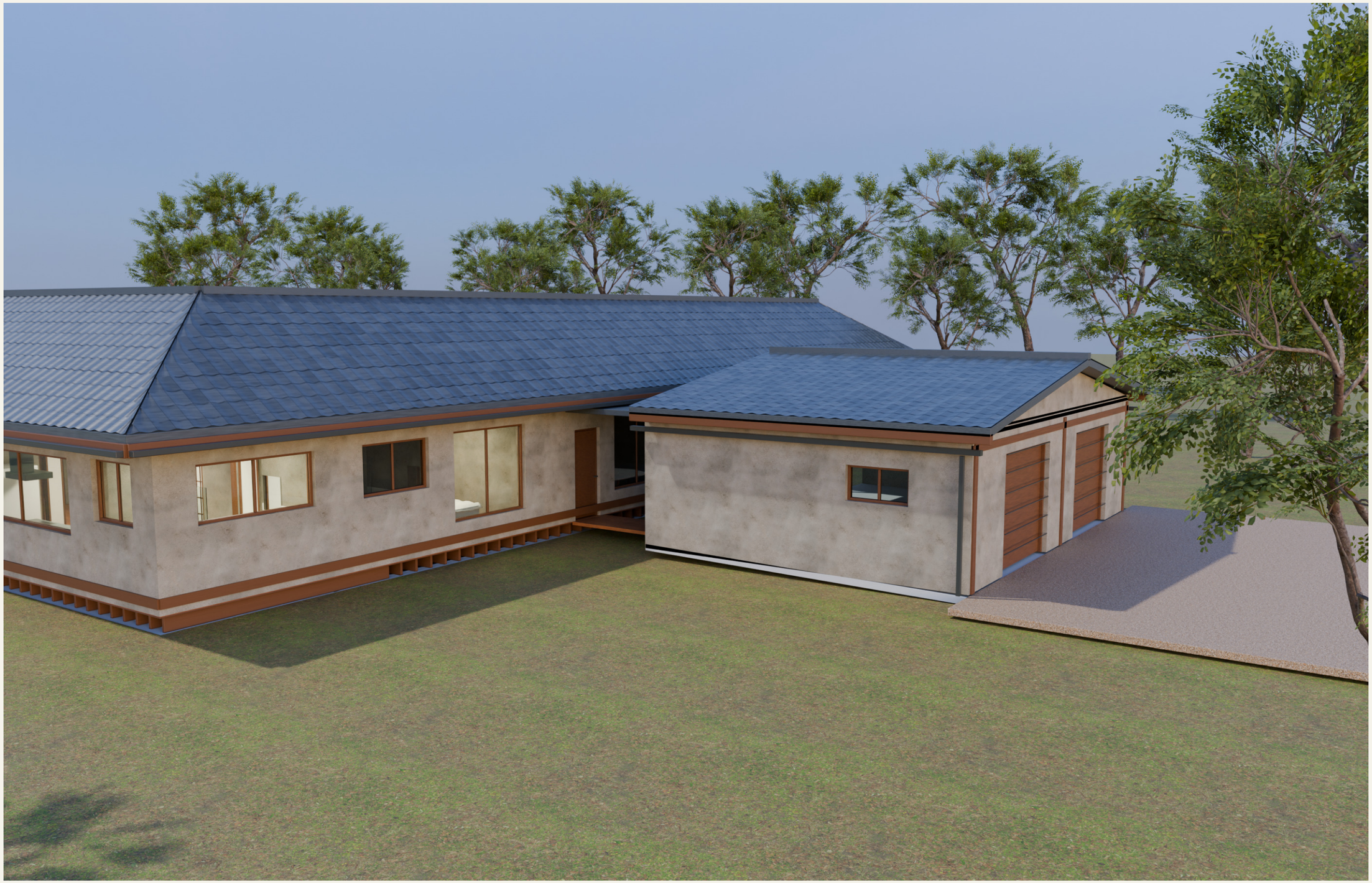
06 / The house opened for inspection

Roof and ceiling removed. Rooms, courtyard circulation and garages remain visible.



07 / Garage arrival

Garages sit 3 m beyond the house, linked by covered timber walks; garden strips protect bedroom outlooks.



08 / Living room at the courtyard end

Separate 192 ft² living room with open sliding screens and direct courtyard exposure.



09 / Primary bedroom

Full-size queen bed, linen bedding, enlarged floor space and direct ensuite access.



10 / Bathroom detail

Modeled ceramic fixtures, fixed vanity, mirror, taps and wall finishes.



11 / The north gallery

Open end-entrance portals maintain the shared indoor circulation loop.



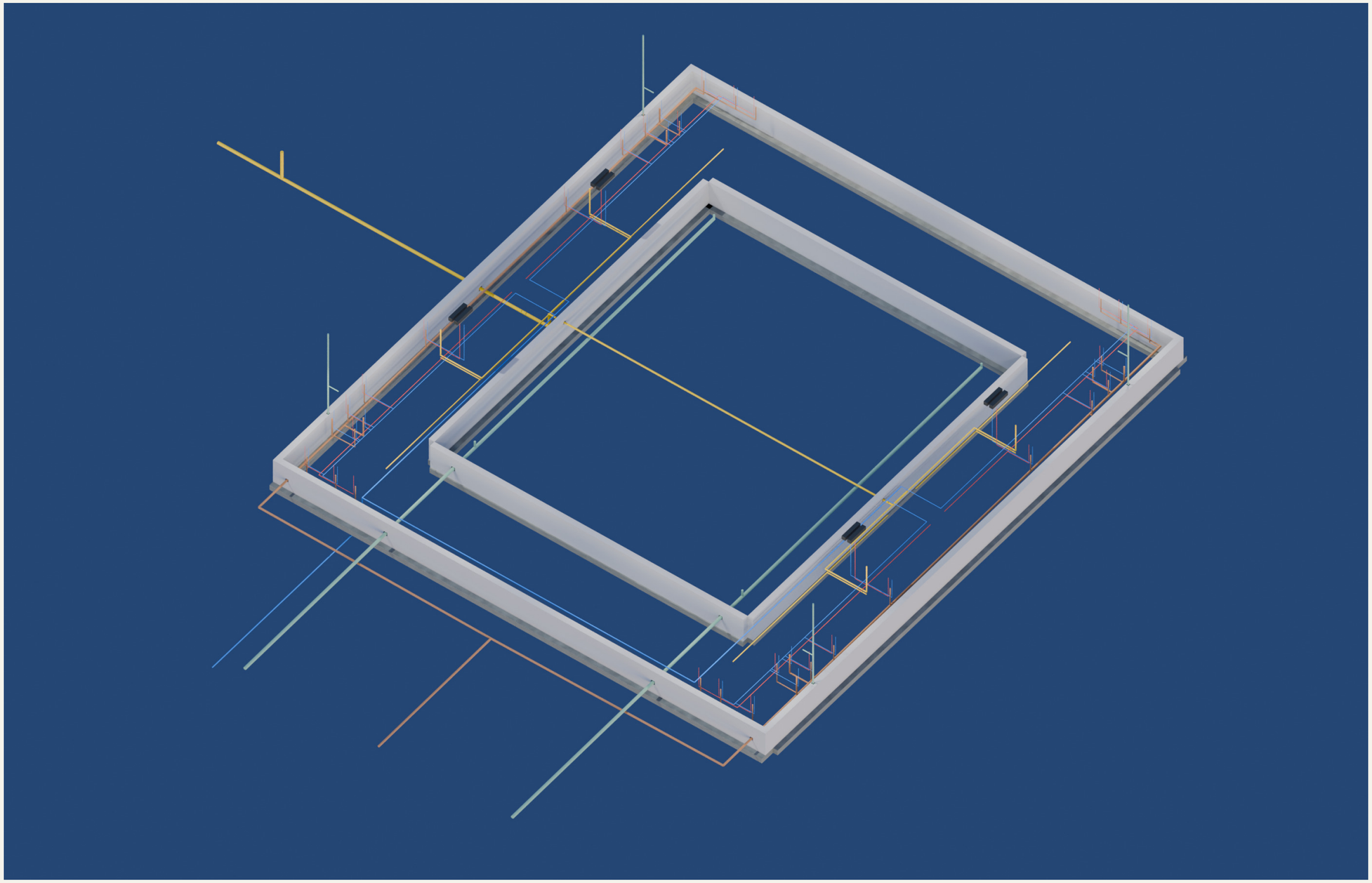
12 / Separate kitchen and dining

Real-size appliances and dining furniture. Sofas belong to the separate living rooms.



Crawlspace / service coordination

Floor and soil hidden to expose the routes. This house has no basement.

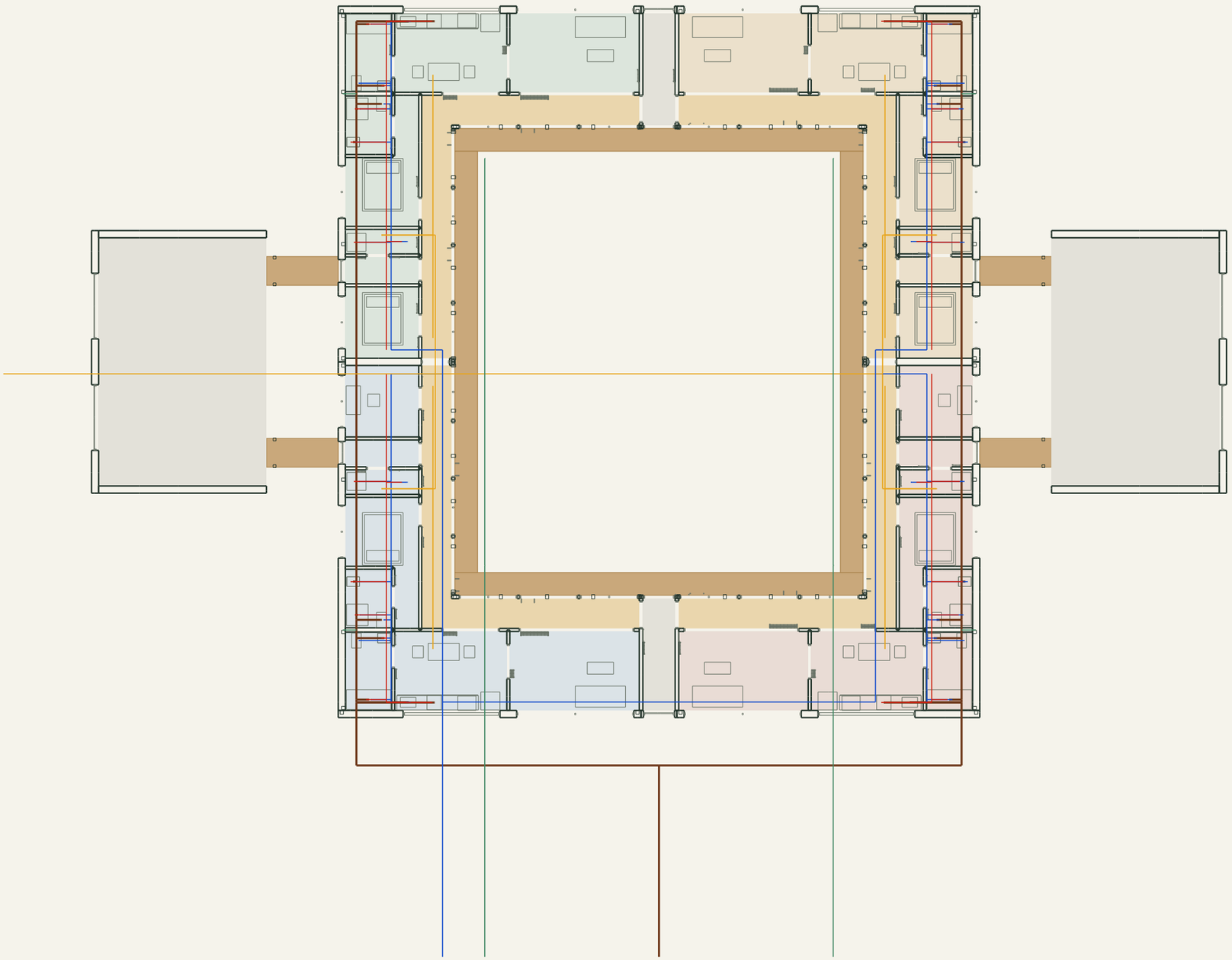


SANITARY / graded drains **COLD WATER** **HOT WATER** **ELECTRICAL CONDUIT**

Diameters, grades, endpoints and levels are in Utility_Schedule.csv. Site connections are unverified placeholders.

Service plan / conditioned crawlspace

Concept routes beneath the residence. Datum: finished house floor = 0.000 m.



MODELLED LAYERS

15 mm oak finish

22 mm structural plywood subfloor

300 mm engineered joist allowance

Sealed ground membrane

Insulated perimeter foundation

Approx. 1.31 m clear below joists

No basement or underground occupied room. Utility cutaways remove soil and floor only for inspection.

Small drains: about 2.083% fall. Larger mains: about 1.042%. Nominal sizes and connection elevations are preliminary.

Supply burial, foundation depth, reinforcement, drainage outfall and actual utility availability need site-specific design.

SANITARY

COLDWATER

HOTWATER

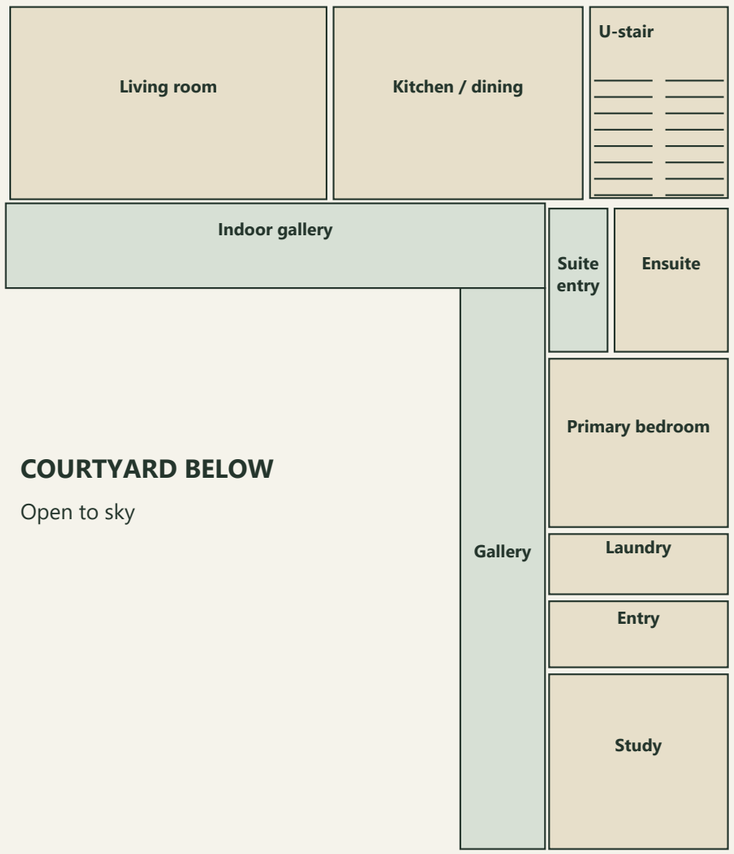
ELECTRICAL

VENT

Optional / one quadrant with two storeys

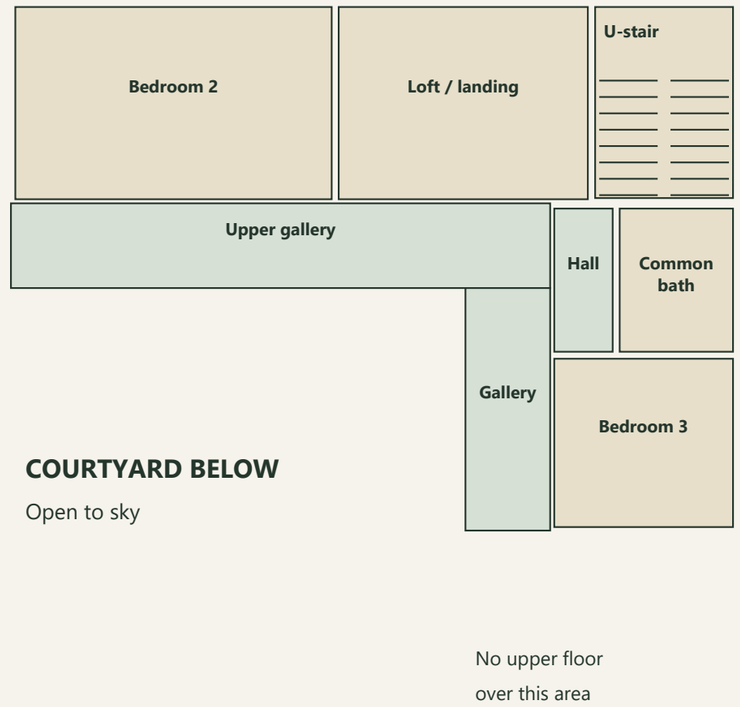
Separate concept only: three bedrooms total, one bathroom upstairs. Not included in the 5,000 ft² main IFC.

GROUND FLOOR / one bedroom, one bathroom



The lower guest bathroom becomes the stair. The upstairs bathroom stacks over the lower ensuite. Main-model north bedroom 2 becomes a study in this optional arrangement.

UPPER FLOOR / two bedrooms, one bathroom



Approx. 956 ft² added upper footprint; about 5,956 ft² whole-house gross if one quadrant is extended. Sixteen 187.5-mm risers, 1-m flights and a 1.2-m landing are layout allowances.

Stair headroom, guards, egress, roof changes, structure and final area require architect design. Diagram is not a construction plan.

Water and drainage / capacity-informed allowances

Eight bathrooms, four kitchens and four laundries. Sizing is driven by fixture demand and site conditions, not floor area alone.

WATER SUPPLY

2-inch shared cold-water service allowance; 1-inch quadrant headers with smaller fixture branches.

Stress scenario: 42 gpm with eight showers plus selected kitchen, laundry and toilet fills. This is an explicit scenario, not the final code demand calculation.

At an assumed 50-mm internal diameter, 42 gpm gives about 1.35 m/s velocity. Meter losses, actual pressure, pipe length and elevation still govern.

Four independent 80-gallon heat-pump storage water heaters replace instantaneous electric placeholders. Each has a reserved 30-A circuit and ducted air paths.

DRAINAGE AND CRAWLSPACE

Conservative individual fixture tally: 72 drainage fixture units. Four-inch collectors are a starting allowance, not an approved sewer design.

Large collectors use approximately 1/8 inch per foot fall; small branches approximately 1/4 inch per foot. Assumed site outlet elevations must be surveyed.

Conditioned crawlspace provides access to distribution. Sealed ground membrane, perimeter insulation, drainage, radon details and moisture control need coordinated design.

Courtyard stormwater is separate from sanitary sewage. Outlet capacity, emergency overflow, freezing and groundwater remain unresolved site-design items.

Basis and source links: MEP_Design_Review.md. References include Michigan LARA, ICC plumbing chapters, AO Smith HPWH specifications, ENERGY STAR and Washtenaw well/septic guidance.

The crawlspace is not proven cheaper; compare excavation, waterproofing and suspended-floor costs for the actual site.

Electrical / reserve space before selecting service

Connected-load budget and physical equipment allowances. A licensed designer and utility must complete the demand calculation.

PER QUADRANT

General lighting / receptacles	**3,750 VA**
Small appliance + laundry allowances	**4,500 VA**
Range	**12,000 VA**
Dishwasher + refrigerator	**2,300 VA**
Heat-pump water heater	**4,500 VA**
Ventilation + HVAC allowance	**6,500 VA**
Clothes dryer	**5,000 VA**
Connected total	**38,550 VA**

WHOLE PROPERTY

Four quadrants: 154.2 kVA connected. With an 8-kVA shared allowance: 162.2 kVA, approximately 676 A at 240 V before demand factors.

Four 200-A unit panels and an 800-A shared equipment envelope are reserved. They are not an approved DTE service size or a completed NEC calculation.

Electric vehicle charging, large resistance backup heat and the optional upper floor are excluded. Recalculate when equipment and occupancy are selected.

Separate hot-water systems avoid one long shared hot-water loop. Storage heat-pump units also avoid the very high instantaneous load of multiple electric tankless heaters.

Electrical_Load_Budget.csv and IFC circuit groups record the allowances. Final design must address demand factors, feeder/conductor sizes, protection, grounding, working clearances and utility approval.

Sources and unresolved calculations are documented in MEP_Design_Review.md; no engineered service approval is claimed.

13 / Architect handoff

IFC4 architectural concept plus editable Blender scene, GLB companion, schedules and verification report.

MODEL CONTENT

Project, site, building and storey hierarchy; 4 future dwelling zones; 40 named rooms plus four crawlspace volumes, garages and shared entries included.

Named architectural products, furniture and equipment; real doors/windows and reserved service penetrations; topological space boundaries.

Walls, floor assemblies, sloping roofs, glazing, ceilings, timber posts and beams, fixed kitchens and bathroom fixtures.

Room area quantities, wall quantities, material layer allowances and typed elements. Proposed dimensions are tagged as estimated design intent.

Validation found no schema errors, failed product geometry, negative-volume geometry or room-area overlaps. These are limited model checks, not engineering certification.

PROFESSIONAL DEVELOPMENT STILL REQUIRED

Confirm the reference interpretation and room clearances. The compact proposal is not a literal dimensional trace of the unavailable SKP.

Survey, orientation, zoning, setbacks, permitted dwelling count, utility availability and civil/site drainage.

Occupancy, egress, accessibility, fire and garage separation, energy compliance, product performance and construction details.

Structural sizes, foundations, snow and drift loads, connections and future-storey capacity. Current members are unengineered allowances.

Modeled pipes include preliminary sizes, falls, elevations, systems and ports. Hydraulic sizing, traps, vents, cleanouts, HVAC and electrical engineering remain to be designed.

FILES AND REUSE

Use IFC for BIM exchange. Blender contains packed materials and full landscape; GLB is a lighter viewing companion that omits the surrounding tree belt. Eleven 2,800 × 1,800 PNGs and the storyboard are actual model renders.

ASSET CREDITS

Powered by Poly Haven. Tree, scanned rocks, HDR daylight, plaster, oak, gravel and ground textures are CC0. Individual source URLs are in Asset_Credits.json. Landscape detail is presentation geometry, not surveyed site information.

CONCEPT FOR ARCHITECT DEVELOPMENT. NOT A PERMIT SET OR CONSTRUCTION-READY BUILDER PACKAGE.

14 / Michigan and Washtenaw review

Preliminary issue identification, checked 8 September 2026. Parcel and enforcing municipality remain unknown.

DECISIONS THAT AFFECT THE ENTIRE PROJECT

Occupancy: four future independent dwellings with a shared gallery need an agreed legal/code classification. Do not assume a single-family or townhouse approval.

Fire strategy: review rated unit/gallery/roof separation, protected openings, alarms, accessibility and whether sprinklers are required for the chosen occupancy.

Zoning: verify permitted dwelling count, setbacks, lot coverage and parking with the actual city or township. The garages count toward building coverage even though excluded from the requested residential area.

Egress: confirm exits from each dwelling and a reliable route from the enclosed courtyard to the outside. Future locks or gallery closures must not obstruct required routes.

ITEMS IDENTIFIED IN THIS MODEL

Bedroom glazing has no verified escape/rescue opening or operating hardware. Large exterior windows now serve the side bedrooms and studies; escape/rescue performance still needs verification.

Garage protection is not certified. Specify the wall/ceiling/door and penetration details, ventilation and the outward-sloping garage floor transition.

Compact room and bathroom clearances need review. A nominal door or corridor width is not evidence of accessibility compliance.

Heavy-looking tile, ring-roof valleys and covered garage links need structural snow/drift/wind engineering and waterproof details. No verified frost depth or design load is assigned.

CURRENT CODE STATUS

LARA lists 2015 Michigan Residential Code and 2021 Michigan Building Code. Its residential/energy injunction notice remains relevant; verify governing editions at permit application. The four-dwelling proposal is a key classification question.

SOURCE / SCOPE

The complete issue register and official links are in Building_Code_Review.md. Code_Issues.json ties the review to model objects. This report is not a compliance certificate or complete permit analysis.

15 / Site, systems and next design work

These unresolved issues should be addressed before construction drawings or land-specific commitments.

RADON

EGLE identifies Washtenaw as requiring radon-resistant residential construction. Aggregate and membrane layers are modeled. Develop sealed details, the vent route and fan provision.

COURTYARD WATER AND ICE

The large internal garden and inward roof slopes concentrate runoff. Design outlets, overflow, freeze protection and thresholds so a blockage cannot flood the residence.

WATER, SEWER AND UTILITIES

Confirm public service availability or county well/septic approval. Size for the approved dwelling/bedroom program. Eight bathrooms alone do not establish the required sewage capacity.

EARTHWORKS AND ACCESS

Verify survey, soils, wetlands/floodplain, driveway and fire access. County-drain work or discharges may require a permit; soil erosion and local grading approvals may also apply.

FUTURE FLOORS

No spare structural capacity is certified. If additional storeys remain a goal, design the foundations, load paths and expansion strategy with an engineer now.

OFFICIAL REFERENCES

LARA codes and editions

Michigan EGLE radon requirements

Washtenaw stormwater and county drains

LARA residential/energy injunction status

Washtenaw sewage / well permits