Cuervo Appraisers, Inc.®
Asset Valuation Solutions

CUERVO APPRAISERS WHITE PAPER • 2026

₱3.5 BILLION A DAY
THE PRICE OF A CITY THAT CANNOT MOVE

METRO MANILA'S COMPOUND ACCESS-CAPACITY CRISIS

Development intensity • gated streets • flood-prone corridors • housing distance • transport capacity

₱3.5 BILLION A DAY: THE PRICE OF A CITY THAT CANNOT MOVE

Metro Manila's Compound Access-Capacity Crisis

Development rights create value only when the market, the site and the access system can carry them.

Prepared By Cuervo Appraisers, Inc.

Cuervo Appraisers White Paper | Research cut-off: 5 September 2026

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THE ARGUMENT IN 30 SECONDS

DEVELOPMENT PRESSURE	ACCESS CAPACITY	VALUATION TEST
FAR adds residents, jobs, visitors, deliveries and service movements.	Transit, connected streets, gated routes, flood resilience and housing determine how activity moves.	Legal intensity is not automatically the most feasible or productive development scenario.

The defensible question is not whether density is good or bad. It is whether intensity is supported by access.

Evidence-led. Pro-density where access supports it. Clear about what the current data cannot yet prove.

Executive Summary

JICA has cited a **₱3.5 billion-per-day** estimate of Metro Manila's congestion-related transport cost based on a 2017 survey, with a no-intervention scenario of **₱5.4 billion per day by 2035**.[6] These are modelled economic burdens, not current measured cash invoices. But the scale is a useful public hook because it shows that traffic is not merely an inconvenience: it is a recurring productivity, logistics, housing and property-market cost.

The cost does not come from a single factor. Metro Manila's congestion reflects the interaction of development pressure, an historically uneven transport platform, incomplete street connections, access-controlled subdivisions and superblocks, flood-prone corridors, housing that many workers cannot afford near employment centres, and decisions distributed across multiple local and national institutions.

Floor Area Ratio, or **FAR**, remains important. It can multiply gross floor area and therefore the residents, workers, visitors, deliveries, service movements, parking entries and peak-period trips associated with a site. But FAR is one variable in a larger system. High density beside high-capacity rail, connected streets, safe walking routes and mixed uses may move people more efficiently than lower-density development that depends on a small number of car routes. Research finds that travel outcomes depend strongly on destination accessibility and street-network design, while density alone is comparatively weak after other built-environment variables are considered.[15]

The same access system can be weakened from several directions. Private subdivisions can remove potential cross-connections and concentrate non-resident movement onto perimeter arterials. A historical Metro Manila study estimated that exclusive villages covered roughly 12% of metropolitan land area and described them as a virtual cordon around important central-business-district approaches, while also documenting the security, quiet and property-value concerns of residents.[21] Republic Act No. 9904 recognizes conditional homeowners-association powers to regulate subdivision-road passage, so the public-interest answer is not a blanket claim that every gate must disappear. The relevant question is whether lawful access control reduces route redundancy and whether negotiated openings, emergency links, timed access or pedestrian connections can improve the wider network without imposing uncompensated harm on residents.[19]

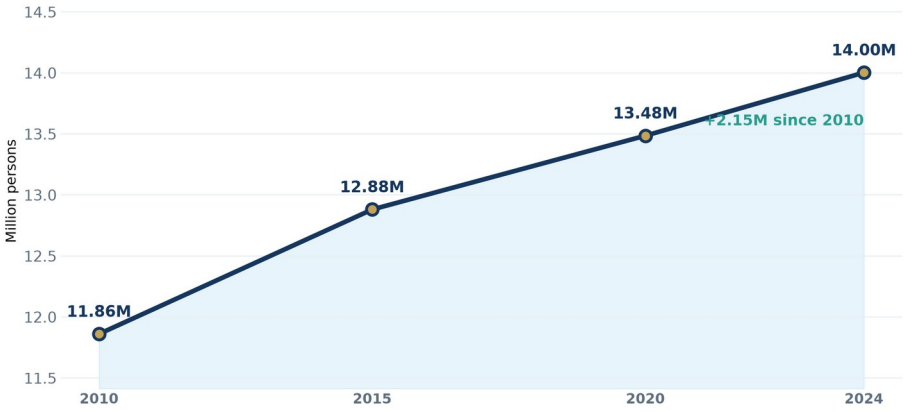
Flooding creates a different but related loss of capacity. HazardHunterPH is an official GeoRiskPH tool that provides **indicative, location-based** hazard assessments using updated government-agency data. Its MGB Flood layer classifies susceptibility as Low, Moderate, High and Very High, with the categories associated with different likely flood-height and duration bands.[22] [23] The layer is not a real-time road-closure register or an engineering certification. Nevertheless, it shows why effective access is climate-sensitive: when a road, intersection, bridge approach or alternate route becomes slow or unusable, the remaining network must carry displaced trips. A peer-reviewed Metro Manila study found that about one-third of trucks that changed routes did so because of flooding, and its 5-year and 25-year scenarios reduced road-network performance.[26]

Housing location intensifies the system. PIDS finds that a 30% housing-cost rule can overstate affordability for poorer households and that socialized and economic housing are increasingly located on urban fringes.[10] When security guards, retail workers, food-service staff, cleaners, drivers, maintenance teams and construction workers cannot live near employment centres, housing unaffordability is converted into longer commutes, more transfers, greater peak-direction demand and higher exposure to flooded or congested corridors.

The conclusion is not "reduce FAR everywhere," "open every private road," or "ban development in every flood-susceptible area." The defensible policy is to make development intensity conditional on **reliable access, network permeability, flood resilience, worker-housing accessibility and market feasibility**. For valuation, legal development rights are inputs. They are not automatically the same as market-supported, infrastructure-supported or financially feasible development intensity.

NCR Crossed 14 Million Residents in 2024

The latest census adds 2.15 million residents to the 2010 metropolitan baseline.



Source: Philippine Statistics Authority, 2024 Census of Population release, 1 Aug 2025.
Figures rounded to two decimals in labels; exact 2024 population: 14,001,751.

1. The Cost Is a Systems Bill, Not a Single-Cause Bill

A headline cost in billions invites a simple explanation: too many cars, too little road space, or too much development. Metro Manila's evidence does not support such a single-variable conclusion.

The metropolitan traffic burden is better understood as a chain. Development adds activity. Transport supply determines how many people and goods can move. Street permeability determines how many alternative routes are available. Flood exposure determines whether those routes remain usable during heavy rain. Housing location determines how far workers must travel. Governance determines whether a project's private benefits are matched by metropolitan access investment.

Contributor	How it can add pressure	What must be measured before assigning causality
Development intensity	Adds residents, employees, visitors, deliveries and service movements	Realized GFA, occupancy, trip generation, mode split and time of opening
Transport capacity	Limits person-moving and goods-moving ability	Rail and bus supply, frequency, capacity, transfer quality and reliability
Street permeability	Removes cross-connections and concentrates trips on fewer arterials	Gate conditions, connected street-km, route redundancy and traffic assignment
Flood susceptibility	Slows or removes links during rainfall and raises rerouting demand	Flood depth/duration, drainage, road elevation, closure records and wet-weather speeds
Housing distance	Pushes workers into longer peak-direction commutes	Rents, wages, household structure, travel times and worker catchments
Governance	Separates land-use benefits from regional transport costs	Project pipeline, LGU boundaries, cumulative demand and infrastructure commitments

The evidence therefore supports a **directional diagnosis**, not a completed causal econometric model. The public value of this paper is to make the full chain visible and to identify the measurements required for the next phase.

The cost is measured in billions. The cause is a chain of bottlenecks.

2. Development Intensity Adds Demand—But FAR Is Only One Layer

FAR is often treated as a technical figure in a zoning table. In reality, it is one of the consequential numbers in urban property.

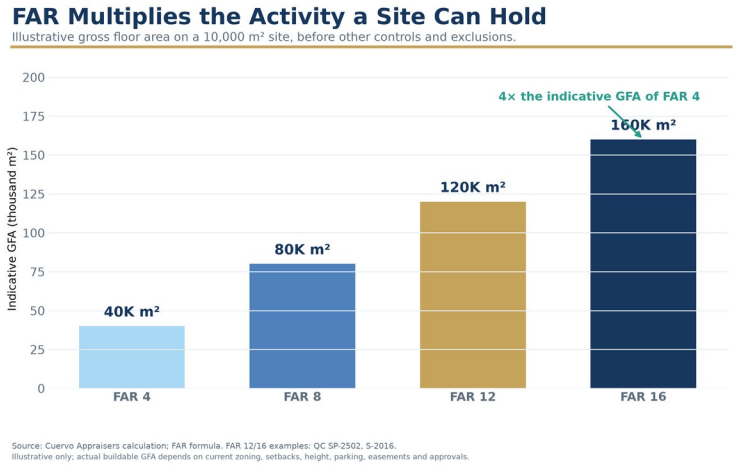
FAR = Gross Floor Area ÷ Lot Area. A FAR of 4 on a 10,000 m² site permits an indicative 40,000 m² of gross floor area before applying the detailed controls, exclusions, setbacks, open-space requirements and approval conditions relevant to a specific site. FAR 16 on the same site implies 160,000 m²—four times the floor area.

Lot area	Illustrative FAR	Indicative GFA	Planning interpretation
10,000 m²	4	40,000 m²	Significant urban intensity
10,000 m²	8	80,000 m²	Major residential, office or mixed-use potential
10,000 m²	12	120,000 m²	Very high concentration of activity
10,000 m²	16	160,000 m²	Exceptional intensity requiring exceptional access evidence

The increase is not only architectural. Depending on use and occupancy, it may bring additional residents, office workers, shoppers, deliveries, ride-hail movements, service vehicles, parking entries, loading activity and curb demand.

Yet FAR alone does not determine travel. A high-FAR building beside high-capacity rail, frequent buses, connected streets and safe pedestrian routes may move people more efficiently than a lower-density complex that is accessible primarily by car. Ewing and Cervero's meta-analysis found that vehicle travel was most strongly related to destination accessibility and street-network design, while transit use was related to transit proximity and network design; density alone was comparatively weak once other built-environment variables were controlled.[15]

The planning question is not "How high is the FAR?" It is "What access system will carry the activity that the FAR permits?"

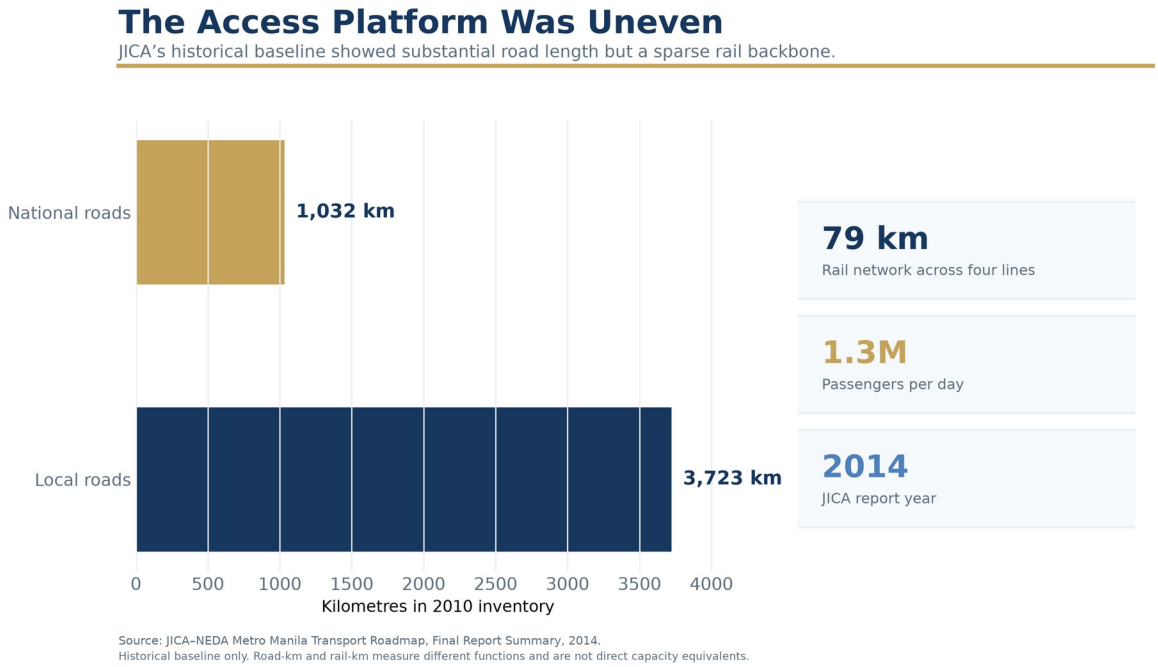


3. Metro Manila's Scale and Historical Access Platform

The 2024 Census of Population placed NCR's population at **14,001,751**, up by **517,289** from 2020 and by **2.15 million** from 2010.[1] PSA reported average annual growth of **0.91% from 2020 to 2024**.[1] NCR also remained the Philippines' most densely populated region at **22,561 persons per square kilometre in 2024**.[2]

Population is not the same as floor area, and region-wide density is not a parcel-level measure. But these figures establish the scale of the system that roads, rail, buses, sidewalks, intersections, drainage and housing markets must serve.

JICA's 2014 roadmap, based on a 2010 inventory, reported **1,032 km of national roads** and **3,723 km of local roads** in Metro Manila. The report stated that vehicle presence made roads disproportionately inadequate and identified missing sections, nonstandard segments, right-of-way constraints and porous zoning controls.[3] The same report recorded **79 km across four railway lines** in the Greater Capital Region, carrying about 1.3 million passengers per day at the time.[3]



These are historical baselines, not the 2026 network. Their value is explanatory: they show the uneven access platform inherited by a metropolis that continued to add people, buildings, jobs and economic activity. They also explain why simple road-length totals are inadequate. A local road may provide frontage but little metropolitan connectivity; a gated subdivision, superblock, waterway, rail barrier, dead end, missing bridge or flooded link may force trips onto a small number of arterials.

The critical concept is **effective access capacity**: how many people and goods can reach a district reliably, by all modes, within a useful time window and under both ordinary and disrupted conditions.

4. A Verified Quezon City Example—with an Important Date Label

Quezon City's official council record hosts **SP-2502, S-2016, the Comprehensive Zoning Ordinance of 2016**.[4] The ordinance contains specific FAR 12 and FAR 16 provisions. FAR 16 applied to lot-deep areas on both sides of Quezon Avenue from EDSA to G. Araneta Avenue and to substantial EDSA sections through Quezon City outside the QC CBD. FAR 12 applied to other identified Quezon Avenue, Katipunan and EDSA–Timog areas.[4]

The same ordinance contains road-widening and proposed right-of-way provisions. That juxtaposition is analytically important: high development rights and acknowledged access constraints existed within the same regulatory framework.

But the date matters. Quezon City's official planning page identifies the associated Comprehensive Land Use Plan as the **2011–2025 CLUP**.[5] Accordingly, this white paper treats the ordinance as a **verified historical regulatory example**. It does not claim, without a later official instrument, that every cited provision remains unchanged or governs all 2026 applications.

Verified observation	What it shows	What it does not prove
FAR 12 and FAR 16 provisions existed in SP-2502, S-2016	Very high development rights were formally assigned to selected major corridors	That the provisions remain unchanged in 2026
Road-widening and right-of-way provisions appeared in the same ordinance	The framework recognized access and circulation constraints	That widening alone can absorb the resulting activity
The cited corridors include EDSA and Quezon Avenue	High intensity was placed on metropolitan arterials	The exact realized GFA or congestion contribution of those rights

The next empirical question is not whether high FAR appeared in the ordinance—it did. The question is how much of that entitlement was built, how it was occupied, what trips it generated and what access capacity existed when each project opened.

5. Private Gates and the Price of a Disconnected Network

Private subdivisions can provide security, quiet, shared maintenance and a controlled residential environment. They can also change the geometry of the metropolitan road system.

A gate does not need to close a major arterial to affect traffic. If a local cross-connection, parallel route or pedestrian link is unavailable to non-residents, through-trips may be pushed onto perimeter roads. The consequence can be a longer route, fewer alternatives when an arterial is congested, greater loading at gate approaches and more concentrated demand at a small number of intersections.

A 2003 Eastern Asia Society for Transportation Studies paper by Diaz, using JICA and UP-NCTS village inventories, estimated that exclusive villages covered roughly **12% of Metro Manila's land area** and that about **36% of residential villages** exerted some degree of access control. The paper described exclusive villages near central business districts as forming a virtual cordon and reported that non-resident traffic was often forced to go around them.[21] The figures are historical, not a current 2026 inventory, but the mechanism remains directly relevant to network analysis.

The study also documented the tradeoff. Opening village roads could reduce travel time and vehicle operating cost for some motorists, but residents identified security and clean, quiet surroundings as principal benefits of exclusivity. In a stated-preference survey for an unnamed village, expected residential property-value reductions under different opening scenarios ranged from **11% to 28%**.[21] That result is not a current market transaction estimate. It shows why access reform must consider both regional mobility benefits and localized resident disbenefits.

Philippine law makes the boundary precise. Section 10(4) of Republic Act No. 9904 permits a homeowners association to regulate access to or passage through subdivision/village roads for privacy, tranquility, internal security, safety and traffic order, but conditions that power on public consultations, compliance with laws and regulations, approval from concerned government agencies or units, and appropriate memoranda of agreement.[19] Section 10(11) separately recognizes that opening an area to outsiders or establishing institutions that generate traffic can affect privacy, security, safety and tranquility.[19]

In September 2026, the Supreme Court's public release in *Sabig v. Court of Appeals*, G.R. No. 278137, stated that an HOA may sanction delinquent members but cannot deprive members of their right to use common areas including subdivision roads. The Court cited restrictions on deliveries, taxis, tricycles, ride-hailing vehicles and guests as violating that right.[20] This protects resident and member access. It does **not** establish a general unrestricted public right for non-residents to use every privately controlled road as a through-route.

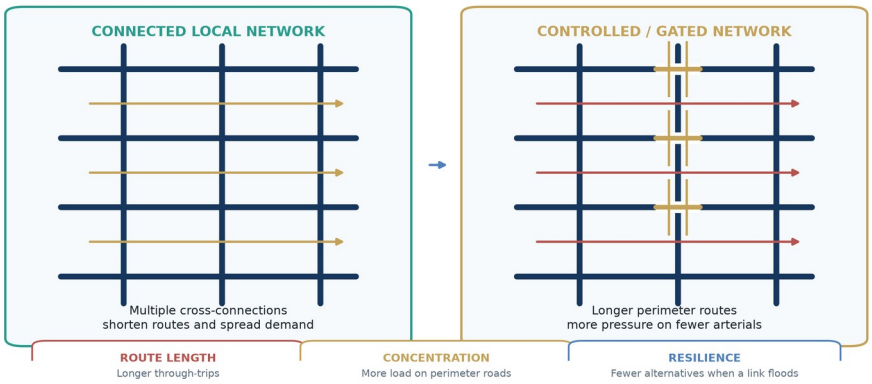
The correct planning question is therefore not "Should all gates be removed?" It is:

> **Where does lawful access control create a material network-permeability constraint, and what negotiated design can improve regional movement without destroying legitimate security and amenity benefits?**

Possible solutions include timed openings, emergency and service access, pedestrian and cycling connections, public-transport links, shared-impact agreements, gate queuing management, corridor contributions and evidence-led decisions based on current traffic assignment. Each option requires local legal, security, engineering and community review.

A Gate Can Remove a Link Even When Roads Still Exist

Private access control can concentrate through-trips on perimeter roads and reduce route redundancy.



Source: RA 9904 §10(4), SC public release 2 Sep 2026, and Diaz (2003) historical Metro Manila road-opening study.
Conceptual network diagram. Legal access control is conditional; solutions require security, community, engineering and traffic review.

The diagram is a network explanation, not a presumption that every gate causes measurable metropolitan delay. The relevant appraisal question is whether the access-controlled link materially changes route redundancy, emergency movement, service access or the traffic load on perimeter roads under the project's actual operating conditions. That question can be tested through current GIS, traffic assignment, gate-operation records and lawful community consultation.

6. Flooding Removes Road Capacity When the City Needs It Most

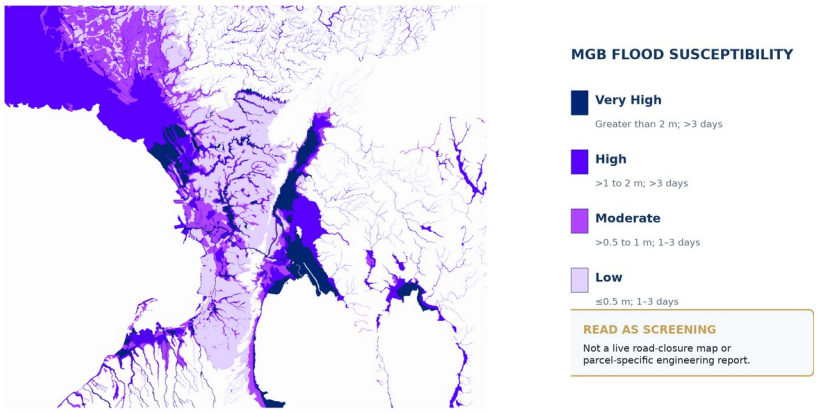
Flooding is not merely a drainage or public-health issue. It is a temporary change in the capacity and reliability of the metropolitan access network.

HazardHunterPH describes itself as a tool that generates **indicative hazard assessment reports** for a user-specified location. It uses updated information from mandated government agencies through GeoRiskPH and directs users to DENR-MGB for more detailed or official flood and rain-induced-landslide information.[23]

The official HazardHunterPH interface exposes a Hydro-meteorological **Flood (MGB)** layer. Its MGB Flood ArcGIS service is a polygon layer with four coded susceptibility categories: Low, Moderate, High and Very High.[22] [25] The service description associates those categories with likely flood-height and duration bands: Low, 0.5 metre or less and 1–3 days; Moderate, greater than 0.5 metre up to 1 metre and 1–3 days; High, greater than 1 metre up to 2 metres and more than 3 days; and Very High, greater than 2 metres and more than 3 days.[25]

Flood Susceptibility Is an Access-Reliability Variable

Official MGB polygons show where flood susceptibility can reduce speed, close links or force route diversion.



Source: HazardHunterPH / GeoRiskPH; DENR-MGB Flood MapServer, accessed 5 Sep 2026.
Extent: 120.88–121.20°E, 14.35–14.90°N. Use MMDA, DPWH, LGU and PAGASA records for current operational conditions.

The figure shows the complete MGB flood-susceptibility layer within the defined Metro Manila screening extent. It should be read as a **geographic screening image**, not as a current list of every flooded road or a parcel-specific engineering certification. HazardHunterPH itself warns users that administrative boundaries and hazard intersections may not fit perfectly when calculating exposure or proneness and advises visual verification with boundary layers.[22] [23]

The access mechanism is clear even without pretending that the map predicts a particular traffic jam. When floodwater reduces speed, closes a link, impairs an intersection or makes a bridge approach unreliable, trips are diverted to other roads. If those alternatives are already congested, gated, narrow or also flood-susceptible, the system loses route redundancy and the traffic cost spreads beyond the original flooded location.

Bacero and Fillone's peer-reviewed Metro Manila study used GPS truck data, driver surveys and scenario modelling. It found that about **one-third of trucks that changed routes did so because of flooding**. Its 5-year and 25-year scenarios reduced road-network performance, and the study identified flooded segments on open truck routes, truck-ban routes and Mabuhay lanes.[26] The study specifically reported examples including Rizal Avenue, East Grace Park, Biak na Bato, España–Lacson, Lagusnilad, Greenhills, C-4, Estrella, Cembo, P. Burgos, Pedro Gil, Recto–Morayta, Quezon Avenue and Taft Avenue. These are study-identified examples, not a current exhaustive closure list.

The public data boundary matters. The MMDA FOI portal records a successful request for historical Metro Manila flood reports covering 2022–2025, but the public record does not expose the underlying attachment. A separate request for a list of flood-prone barangays in Manila City was directed to the Manila City LGU rather than fulfilled as an MMDA official record.[27] The paper therefore uses the HazardHunterPH/MGB susceptibility layer for the screening map and the peer-reviewed study for route and mobility mechanisms, while leaving current incident counts and closure status to MMDA, DPWH, LGUs and PAGASA operational records.

For property and development analysis, flood exposure should be translated into **wet-weather access reliability**. A site may be legally accessible and well-connected in dry weather yet operationally fragile if a single low-lying approach, drainage bottleneck or bridge connection fails during a storm.

7. Congestion Is a Property-Market Constraint

TomTom's 2025 Manila data show a **57% average congestion level** across the city road network. During the evening rush, a 10 km trip averaged **43 minutes 29 seconds**, at **13.8 km/h**. The platform estimated **143 hours lost during rush-hour traffic in 2025**.[7]

Source: TomTom Traffic Index, Manila city data, 2025.
Congestion level compares observed travel time with free-flow travel time; it is not the share of roads congested.

TomTom's percentage is a modeled congestion indicator based on travel time relative to free-flow conditions; it should not be interpreted as "57% of roads are congested." The platform also distinguishes all-day average congestion from its higher evening-rush measure.[7]

JICA's 2024 release cites the 2017 survey estimate of **₱3.5 billion per day** in Metro Manila congestion-related transport costs, potentially reaching **₱5.4 billion per day by 2035 without intervention**.[6] These figures must be read with their dates and model assumptions. They are not current cash losses recorded in a ledger; they estimate the economic burden of slower, less reliable movement.

For real property, the mechanisms are concrete. Congestion can narrow labour catchments, increase delivery buffers, require more fleet time, reduce the practical radius from which customers or employees can arrive, complicate construction logistics, increase parking and loading pressure, make flood detours more expensive, and affect the rent or price that a market participant will pay for access.

A property can have a high legal FAR and still face access constraints that affect the timing, cost, marketability or feasible scale of development.

8. Congestion Is Also a Housing-Location Problem

Metro Manila's employment centres depend on a wide wage spectrum. Security personnel, retail workers, food-service staff, cleaners, drivers, maintenance teams, clerical staff and construction workers support districts whose nearby housing may be priced far above their budgets.

The published NCR Wage Order NCR-27 schedule illustrates the scale of the gap. It lists a first-tranche non-agricultural minimum wage of **₱755 per day**, followed by ₱780 upon the second tranche in January 2027.[8] At 26 paid days, ₱755 equals an illustrative **₱19,630 gross monthly wage**. Thirty percent is **₱5,889 per month**.

However, implementation of NCR-27 was under litigation at this white paper's research cut-off. A 28 August 2026 Supreme Court press briefer recorded that the Pasig RTC had issued orders including a preliminary injunction against implementation and that the Supreme Court had directed the parties and wage authorities to comment on a petition seeking to set those orders aside.[9] The ₱755 figure is therefore used only as a **published-order scenario**, not as an uncontested statement of the legally operative wage for every employer.

PIDS finds that the 30% rule can **overstate affordability for poorer households** and that socialized and economic housing projects are increasingly located on urban fringes.[10] UN-Habitat describes the related dilemma: accessible low-income locations may have insecure tenure, while more secure affordable housing may be peripheral and costly to reach.[11] This can produce **housing-induced commuting displacement**—workers filtered out of housing near the employment centres that depend on their labour.

The Worker-Housing Affordability Gap

Cuervo Appraisers proposes a district-level research metric:

> **Worker-Housing Affordability Gap (WHAG) = Affordable monthly housing budget for a wage group – Cost of the least-cost adequate formal housing within the selected employment catchment.**

A negative WHAG does not measure congestion by itself. It signals dependence on workers commuting from outside the local housing market. Calibration requires verified rents, room and bed-space costs, household structure, transport costs, wage distributions and travel times. Wet-weather travel and gated-route detours should be included in the next version of the metric.

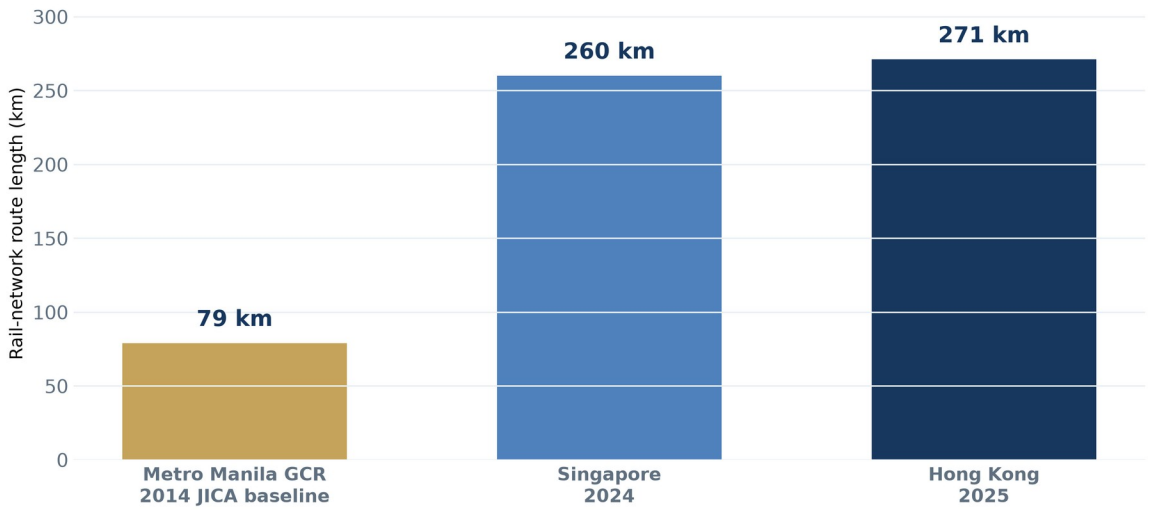
9. High Density Works When Access Is Dense

High density can function well when development, public transport, streets, flood resilience and station access are planned together.

Hong Kong's Transport Department reports approximately **271 km of MTR route network**, 99 stations and an average of 4.78 million rail passengers per day in 2025. It describes rail as the backbone of public transport.[12] Hong Kong's Highways Department reports 2,266 km of public roads as of June 2026, but road length and rail route length measure different functions and should not be combined as a single capacity index.[13] Singapore's Land Transport Authority reported around **260 km of rail in 2024**, planned to grow to 360 km over the next decade, with a target for eight in ten households to be within a ten-minute walk of a station.[14]

High Density Performs Better with a Rail Backbone

Illustrative network lengths show the importance of multiple high-capacity access paths.



Source: JICA 2014 historical baseline; Singapore LTA (2024); Hong Kong Transport Department (2025).
Illustrative only: years, geographies and network definitions differ. This is not a city ranking.

The comparison is illustrative, not a league table. Network definitions, geography, ridership, urban form and institutional structure differ. The point is not that one number can rank cities. The point is that cities able to sustain intense development invest in **multiple high-capacity access paths**, connect land development to transport planning and protect the reliability of critical links.

10. Access Requires Permeability, Resilience and Governance

Road projects remain necessary. Missing links, bridges, intersection improvements, grade separation, freight routes, drainage upgrades and network resilience can produce real benefits. But road capacity alone is unlikely to be a permanent solution to demand generated by metropolitan growth.

JICA's 2014 Dream Plan itself was multimodal: 137 km of new at-grade roads, expanded expressways, 246 km of main urban/suburban rail, 72 km of secondary rail, public-transport reform and traffic management.[3] Its structure recognized that access requires a system, not a single mode.

International research also shows why road expansion should be evaluated carefully. Duranton and Turner found that, in their US-city sample, vehicle-kilometres travelled rose approximately proportionately with interstate lane-kilometres as additional driving, commercial activity and migration absorbed capacity.[16] The finding is not a Metro Manila coefficient, but it supports the broader warning that added lanes may generate additional travel and may not provide lasting congestion relief without complementary demand management and land-use measures.

The systems requirement is broader than road space:

Access condition	Failure mode	Evidence response
Network permeability	Gates, dead ends and superblocks remove alternatives	Model current and negotiated-route scenarios
Flood resilience	Water reduces speed or removes links	Overlay susceptibility, drainage and operational records
Housing access	Workers travel from farther away	Measure rents, wages, travel times and catchments
Transit capacity	High activity depends on road-based trips	Test station access, frequency, capacity and transfers
Metropolitan governance	Costs cross LGU boundaries	Assess cumulative district and corridor demand

NCR functions as one labour, housing and property market, but it is composed of 16 cities and one municipality.[1] Land-use controls are exercised locally, while major transport, drainage and hazard responsibilities are distributed across national agencies, government corporations, regulators and metropolitan bodies. An LGU may capture property-tax, business-tax and development benefits from additional floor area while traffic and flood-detour demand spread across regional roads, stations and neighbouring jurisdictions.

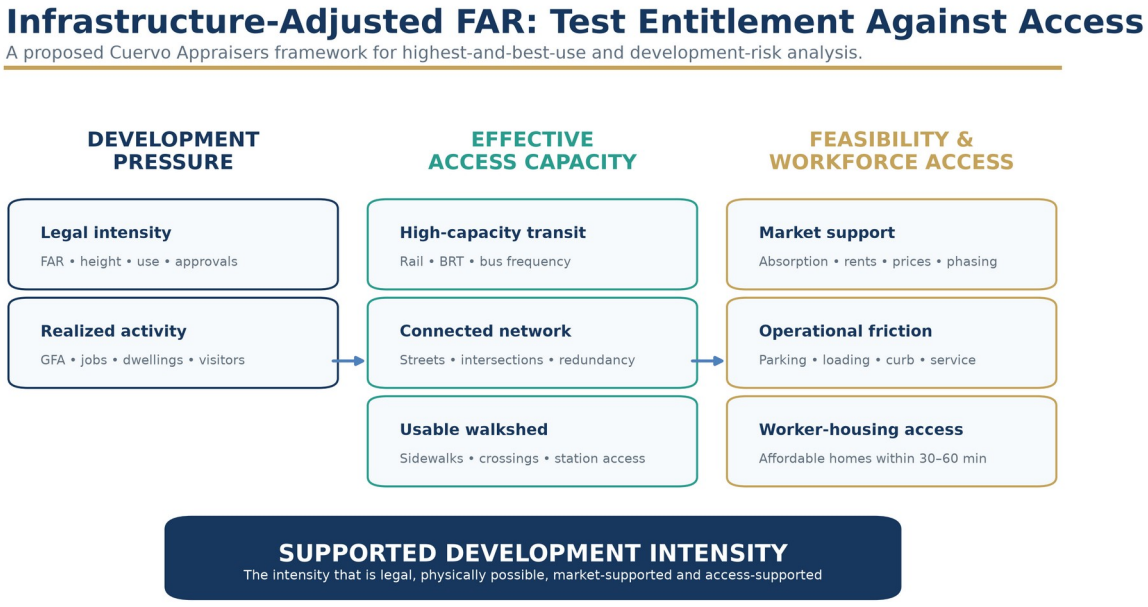
11. The Cuervo Appraisers Access-and-Resilience-Adjusted Development Intensity Framework

Cuervo Appraisers proposes **Access-and-Resilience-Adjusted Development Intensity** as a professional analytical lens for feasibility, highest-and-best-use and development-risk work. It is not an official zoning control and does not replace an LGU determination.

The framework asks:

How much of a site's legal development intensity is credibly supported by market demand, infrastructure, route permeability, flood resilience and workforce-housing conditions?

The current International Valuation Standards include specific standards for Real Property Interests and Development Property, together with requirements addressing data, inputs, models, documentation and professional judgment.[17] [18] That framework reinforces a basic valuation principle: the number written in a zoning table is an input, not the completed value conclusion.



Source: Cuervo Appraisers proposed analytical framework; informed by IVS 400 and IVS 410.
Conceptual—not an official zoning index. Weights and thresholds require district-level data and validation.

Analytical layer	Evidence to test	Valuation relevance
Legal intensity	Allowable FAR, height, setbacks, use, parking, overlays and approval conditions	Establishes legal permissibility, not automatic feasibility
Realized development pressure	Existing GFA, pipeline, jobs, dwelling units, visitors, freight and curb activity	Shows cumulative activity competing for access

Analytical layer	Evidence to test	Valuation relevance
Dry-weather access	Rail and bus capacity, frequency, connected street-km, walking access, intersections and route redundancy	Tests ordinary-day movement
Network permeability	Gate conditions, private-road status, service/emergency access, timed openings and alternate routes	Tests whether nominal street area becomes usable metropolitan connectivity
Wet-weather resilience	MGB susceptibility, flood depth/duration, drainage, road elevation, critical-link redundancy and closure records	Tests access reliability under disruption
Worker-housing accessibility	Affordable housing by wage band within 30-, 45- and 60-minute catchments	Tests labour access and recurring commuting burden
Market and financial feasibility	Absorption, rents, prices, construction cost, financing, phasing and delay risk	Determines whether entitled intensity can be built profitably and absorbed
Operational friction	Parking queues, loading, ride-hail, deliveries, emergency access and service movements	Captures building-level constraints not visible in FAR alone

For preliminary research—not statutory approval—Cuervo Appraisers proposes:

Reliable Access Capacity = Dry-Weather Person/Goods Capacity × Network Permeability × Wet-Weather Availability × Housing-Access Reliability

The expression is conceptual. It should not be published as a numeric score until the variables, weights, data quality and validation thresholds are established district by district.

A high legal FAR with weak permeability or flood-resilience evidence may indicate the need for phased development, lower initial density, stronger mobility commitments, new connections, reduced parking, employee transport, loading redesign, drainage mitigation, resilient access routes or infrastructure contributions. A lower legal FAR at a highly accessible and resilient location may indicate unrealized value subject to planning approval and market support.

12. Why This Matters to Property Value

A professional valuation must separate **entitlement** from **supportability**.

A high-FAR site may appear more valuable because it permits more saleable or lettable area. But if access constraints delay permits, require expensive mitigation, reduce achievable occupancy, increase construction-logistics costs, narrow the labour pool, create flood downtime or weaken the user experience, the full theoretical GFA may not be the most financially productive scenario.

Conversely, major transport, drainage or flood-resilience investment may expand a site's effective market, reduce perceived travel friction and improve redevelopment prospects. It may also increase acquisition pressure, construction activity and displacement risk. The effect on value is therefore location-, timing- and use-specific.

Valuation question	Evidence required
Is the maximum intensity legally usable?	Current ordinance, zoning map, overlays, easements, height limits, setbacks, parking and approval conditions
Is the development physically possible?	Site geometry, geotechnical conditions, utilities, access, loading, fire and emergency movement, construction staging and flood conditions
Is the network reachable?	Transit, connected streets, gate conditions, route redundancy, pedestrian access and wet-weather alternatives
Is the market depth sufficient?	Demand by use, absorption, competing pipeline, rents, prices, occupancy and user catchments
Is the intensity financially feasible?	Hard and soft costs, infrastructure and drainage mitigation, financing, phasing, delay, operating friction and required return
Is it maximally productive?	Comparative scenarios, residual land value, timing, risk and probability-weighted approvals

This is where Cuervo Appraisers' role differs from a planning headline. The valuer must translate legal rights, infrastructure evidence, market behaviour, flood and access risk into a supportable conclusion—not assume that maximum theoretical floor area is automatically the highest and best use.

13. Policy Directions

The evidence supports a framework that links development intensity to reliable person-moving and goods-moving capacity. The recommendations below are policy options requiring legal, fiscal and technical design—not findings that any single rule should be adopted without further study.

Policy direction	Practical purpose
Use the ₱3.5 billion/day estimate as a systems-cost baseline	Track congestion, flood disruption, logistics delay, housing displacement and lost reliability without treating one modelled estimate as a current ledger total.
Adopt access-and-resilience-adjusted intensity tests	Condition major FAR bonuses on measurable transit, street, walking, permeability and wet-weather access evidence.
Require cumulative district assessment	Evaluate the combined demand of multiple developments sharing the same intersections, stations, gates, flood-prone links and corridors.
Protect future rights-of-way and alternate routes before upzoning	Avoid increasing acquisition cost after higher development rights are capitalised into land value.
Treat gated streets as a negotiated network issue	Use public consultation, legal authority, security analysis and current traffic assignment to test timed openings, emergency routes, pedestrian links and service access.
Publish a metropolitan flood-access observatory	Combine HazardHunterPH/MGB susceptibility, drainage, road elevation, rainfall, operational closures, travel time and recovery data.
Prioritise resilient critical links	Protect and upgrade routes whose failure diverts traffic to already congested or gated corridors.
Use context-sensitive parking and loading controls	Reduce automobile trip inducement near high-capacity transit while preserving emergency, accessibility, freight and service operations.
Capture part of intensity uplift for mobility and resilience	Direct developer contributions toward sidewalks, station access, crossings, BRT, intersection upgrades, drainage and public realm.
Tie major intensity bonuses to workforce-housing evidence	Demonstrate affordable housing access within realistic travel-time catchments or contribute to targeted delivery.

14. Districts for the Next Quantitative Phase

The next phase should test the compound hypothesis rather than repeat it. A parcel- or 250-metre-grid database should combine zoning, realized GFA, employment, housing, street topology, gate locations, flood susceptibility, drainage, traffic counts, transit supply, parking and observed dry- and wet-weather travel times.

District	Why it matters	Primary empirical test
Makati CBD	Mature high-rise centre with constrained streets and high regional labour demand	Realized GFA, intersection capacity, gate-adjacent routes and worker catchments
Bonifacio Global City	Master-planned superblocks with rapid development and external choke points	Internal circulation versus external access, permeability and rail connectivity
Ortigas Center	CBD spanning multiple LGU interfaces	Shared corridor loading, flood detours and governance coordination
Quezon Avenue–EDSA / North Triangle	Verified historical high-FAR provisions and major transit investment	Timing of development rights versus capacity delivery and flood resilience
MOA / Bay Area	Reclaimed superblocks, events, coastal exposure and mixed-use intensity	Block permeability, drainage, curb activity and event peaks
Manila core	Extreme density, legacy street fabric and river/coastal exposure	Public transport, freight, flood-prone links, curb conflict and route redundancy
Alabang and southern villages	Employment node with expressway dependence and historic exclusive-village corridors	Permeability scenarios, worker housing, flood detours and automobile access

The empirical programme should test five questions: whether realized development intensity correlates with peak-period delay after controlling for access; whether the relationship changes after controlling for rail access and street connectivity; whether gated-route permeability and flood susceptibility alter route redundancy; whether major upzonings create measurable before-and-after effects; and how alternative development, housing and resilience scenarios affect cumulative access demand.

15. What the Evidence Supports—and What It Does Not

Supported

The evidence supports the conclusion that Metro Manila's congestion is intertwined with urban intensity, a historically uneven transport network, incomplete street connectivity, access-controlled residential villages, flood susceptibility, fragmented decision-making and the separation of jobs from housing affordable to many workers. It supports stronger integration of land-use, transport, network-permeability, flood and housing evidence in both planning and valuation.

It also supports the proposition that effective access is not the same as road length. A road that is gated, flooded, disconnected, poorly served by transit or inaccessible to a large share of the workforce contributes less reliable capacity than its nominal kilometres suggest.

Not Yet Supported

The present evidence does not quantify the percentage of congestion caused by FAR, private subdivisions or flooding. It does not establish that every high-FAR district performs poorly, that every private gate produces a measurable metropolitan delay, that every flood-susceptible polygon causes a road closure, or that any specific property's maximum zoning entitlement is infeasible. Those conclusions require current parcel-level GIS, traffic assignment, drainage and hazard analysis, realized development, transport counts, market evidence and professional study.

HazardHunterPH is an indicative hazard-assessment platform. Its MGB layer is a susceptibility screen, not a live flood forecast. Current road closures, flood depths and operational travel conditions require MMDA, DPWH, LGU and PAGASA records or site-specific engineering work.

The defensible conclusion is not that one factor causes congestion. It is that Metro Manila's development intensity must be tested against the quality, permeability, resilience and affordability of the access system that carries it.

Conclusion: The City Must Be Able to Carry What It Builds

Metro Manila's next planning question should not be how much more floor area, traffic or housing can fit on a parcel in isolation. It should be how much activity the surrounding city can support—and by how many safe, affordable, reliable and flood-resilient ways people and goods can reach it.

The cost is large because the contributors compound each other. A high-intensity district with limited transit adds road demand. A gated cross-connection can remove an alternate route. A flood-prone corridor can temporarily remove another. Worker housing pushed to the fringe adds daily trips. Fragmented authority can delay the links, drainage and housing responses that the development pipeline requires.

High FAR can create value. Private subdivisions can provide genuine security and amenity value. Flood-susceptibility maps can guide safer design. Transport investment can unlock land value. But each benefit must be tested in relation to the others.

For appraisal, the lesson is direct: **legal FAR, road frontage, nominal network length and dry-weather access are not final measures of development potential.** The value of an entitlement depends on whether the market, the site and the city's reliable access and resilience systems can carry it.

Methodology and Limitations

This white paper validates and synthesizes official population, transport, zoning, wage, housing, legal, hazard and international benchmark sources available through 5 September 2026. It distinguishes current data from historical baselines and planned infrastructure. Simple arithmetic illustrations are reproducible from the cited inputs.

The official HazardHunterPH/MGB flood visual was prepared from the MGB Flood polygon layer for a defined Metro Manila screening extent. The map displays susceptibility categories and is not a parcel-specific engineering report, real-time road-closure map or exhaustive operational incident list. The private-subdivision evidence includes a 2003 historical Metro Manila study and current statutory/judicial sources; it does not produce a 2026 inventory of all gates or quantify the delay caused by every private subdivision.

This is not a traffic-impact assessment, transport model, flood-risk assessment, legal opinion, zoning certification or appraisal of a specific property. It does not determine the current zoning of any parcel, the legal effect of Wage Order NCR-27, the legal status of any subdivision road, or the operational status of any flooded corridor. Project-level decisions require current official records, field inspection, engineering and transport studies, legal advice where appropriate, and a valuation scope tailored to the asset and purpose.

About Cuervo Appraisers

Cuervo Appraisers, Inc. provides independent professional asset-valuation services grounded in evidence, defined scope, market analysis and recognized valuation standards. For development and highest-and-best-use work, Cuervo Appraisers examines not only legal entitlement but also physical possibility, market support, infrastructure, network access, hazard exposure, timing and financial feasibility.

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Cuervo Appraisers independently publishes historical capital value trend studies based on infrastructure and urban development patterns across Philippine growth corridors.

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