





NHS
NHS Trusts and Local Authorities
NHS KEYWORKER
HOUSING - NET ZERO

TECHNICAL SPECIFICATION & CAPABILITY STATEMENT

ADVANCED OFF-SITE MODULAR HOUSING SYSTEMS FOR THE PUBLIC SECTOR

Document Ref: XG-TS-2026-V1

Corporate Registration: X-GEN HOMES LTD | Company No: 16671334

Commercial Projects Email: project@x-genhomes.com

Commercial Projects Hotline: +44 7354 332082

1. Executive Summary

X-Gen® Homes Ltd designs, engineers, and manufactures high-performance, net-zero volumetric and panelised modular building systems. Built to exceed the UK Future Homes Standard, our systems replace high-risk legacy timber-and-straw methods with an unyielding, fire-safe, and moisture-impermeable composite structure.

We provide Local Authorities, housing associations, and NHS Estates with rapid-deployment keyworker and social housing assets backed by an industry-leading **Lifetime Structural Manufacturer Warranty**.

2. Comprehensive Technical Specification Matrix

Section A: Structural, Material, and Fire Safety Performance

Engineering Category	Component & Material Specification	Legacy Off-Site (Agile Timber/ Straw)	Industry Baseline (Standard Wood Frame)	X-Gen® Advanced Modular System	Statutory British Standards & UK Building Regulations
Core Structural Framework	Light-gauge CNC-milled galvanized steel integrated tracking paths.	Organic timber cassette framing packed with straw panels.	Standard soft-wood engineered timber studs and OSB sheathing panels.	Non-Combustible Frame: Structural light-gauge steel provides an unyielding, fire-safe, and rot-proof Class A1 framework.	BS EN 1993 (Design of steel structures) BS EN 10346 (Hot-dip coated steel) Part A (Structure)

Thermal Insulation Core	High-density, fibre-reinforced closed-cellular internal core insulation panels.	High moisture-monitoring dependencies; long-term risk of compression and organic decay.	Traditional glass mineral wool or rigid PIR insulation slabs slotted between timber studs.	Self-Extinguishing Core: Chemically engineered with fire-retardant polymers. 100% moisture-impermeable to entirely eliminate mold risks.	BS EN 13165 (Rigid polyurethane foam products) BS EN 13501-1 (Euroclass fire rating baseline) Part L1 (Conservation of fuel and power)
Primary Exterior Cladding	Precision-engineered, non-combustible natural brickslip facade systems.	Requires specialized external rendering or breathable membrane wraps to avoid damp.	Requires site-applied brickwork or external decorative timber cladding panels.	Class A1/A2 Non-Combustible: Factory-fitted brickslip systems that seamlessly match traditional UK municipal planning aesthetics.	BS EN 771-1 (Clay masonry units specification) BS 8298 (Natural stone cladding design) Part B Vol 1 & 2 (Fire Safety Regulation 7)

Secondary Exterior Cladding	High-density engineered composite panels (38% recycled mineral & limestone content bonded in polymer resin).	Natural timber cladding variants requiring high long-term council maintenance budgets.	Natural wood cladding options that face strict public sector fire-risk and warranty restrictions.	Flame-Retardant Polymer: Engineered to meet Class B-s1, d0 . Requires zero ongoing sanding, staining, painting, or oiling.	BS EN 13501-1: Class B-s1, d0 BS EN ISO 11925-2 (Single-flame source test) BS EN 13823 (Single burning item test)
Fenestration & Openings	Argon-filled triple-glazed composite windows with integrated thermal breaks and charcoal aluminum frames.	Standard double-glazed profiles with high long-term maintenance requirements.	Standard double or triple-glazed timber/uPVC frames vulnerable to localized thermal bridging.	Intumescent Cavity Barriers: Factory-fitted with aperture seals expanding up to 25x their size under heat to completely block cavity fire spread.	BS 4873 (Aluminium alloy windows) PAS 24 (Enhanced security performance) Part Q (Security) & Part L (Thermal U-values)

Compartmentation & Cavities	Multi-unit volumetric joints with factory-installed structural cavity fire-stops.	Relies on manual, site-applied fire-barrier quilts between modules.	Relies on plasterboard linings and on-site cavity barriers vulnerable to workmanship errors.	60–120 Minute Fire Separation: Factory-installed internal party walls and floor cassettes tightly contain fire within a single volumetric cell.	BS EN 1365-1 (Fire resistance: loadbearing walls) BS 9991 (Fire safety design in residential buildings) Part B (Requirement B3: Internal fire spread)
--	---	---	--	--	--

Table 1.1: Structural Performance & Fire Compliance Comparison Matrix

Engineering Category	Component & Material Specification	Public Sector / Council Value Metric	Fire Prevention & Safety Compliance Details	Statutory British Standards & UK Building Regulations
Core Structural Framework	Light-gauge CNC-milled galvanized steel integrated tracking tracks.	Eliminate structural warping, rot, and moisture retention risks common in legacy timber/straw frameworks.	Non-Combustible Frame: Steel structure provides a Class A1 non-combustible base that does not contribute to fire load or flame spread.	BS EN 1993 (Eurocode 3: Design of steel structures) BS EN 10346 (Continuously hot-dip coated steel) Part A (Structure)
Thermal Insulation Core	High-density, fibre-reinforced closed-cellular internal core insulation panels.	High fabric-first thermal performance; completely moisture-impermeable to prevent mold and structural decay.	Self-Extinguishing Core: Chemically engineered with advanced fire-retardant polymers. Formulated to resist ignition, prevent melting/dripping, and maintain structural integrity under extreme heat.	BS EN 13165 (Factory made rigid polyurethane foam products) BS EN 13501-1 (Class E/ Euroclass fire rating baseline) Part L1 (Conservation of fuel and power)

Primary Exterior Cladding	Precision-engineered, non-combustible natural brickslip facade systems.	Matches traditional UK municipal planning aesthetics for seamless urban infill integration.	Class A1/A2 Non-Combustible: Fully satisfies <i>UK Building Regulations Part B (Fire Safety)</i> for multi-occupancy structures. Zero flame spread contribution.	BS EN 771-1 (Specification for clay masonry units) BS 8298 (Design and installation of natural stone cladding) Part B Vol 1 & 2 (Fire Safety Regulation 7 compliance)
Secondary Exterior Cladding	High-density engineered composite panels (38% recycled mineral & limestone content bonded in polymer resin).	Zero ongoing maintenance required (no sanding, oiling, or staining); satisfies local authority green procurement quotas.	Flame-Retardant Polymer: Engineered to meet Class B-s1, d0 fire classification standards. Emits minimal smoke (s1) and produces zero flaming droplets (d0) in fire scenarios.	BS EN 13501-1: Class B-s1, d0 BS EN ISO 11925-2 (Single-flame source test) BS EN 13823 (Single burning item test)
Fenestration & Openings	Argon-filled triple-glazed composite windows with integrated thermal breaks and charcoal aluminum frames.	Exceeds Future Homes Standards; lowers tenant heating demands to actively eliminate community fuel poverty.	Intumescent Cavity Barriers: All window and door apertures are factory-fitted with hidden intumescent seals that expand up to 25 times their size under heat, completely sealing structural cavities against fire spread.	BS 4873 (Aluminium alloy windows specification) PAS 24 (Enhanced security performance) Part Q (Security) & Part L (Thermal U-values)

Compartmentation & Cavities	Multi-unit volumetric joints with factory-installed structural cavity fire-stops.	Fast on-site assembly without relying on manual, error-prone on-site fireproofing applications.	60–120 Minute Fire Separation: Internal party walls and floor cassettes provide a minimum of 60 to 120 minutes of fire resistance (<i>BS EN 1365 compliant</i>), containing fire tightly within a single volumetric cell.	BS EN 1365-1 (Fire resistance tests for loadbearing walls) BS 9991 (Fire safety in the design of residential buildings) Part B (Requirement B3: Internal fire spread)
--	---	---	--	--

Section B: Mechanical, Electrical, and Eco-Technology Integration

System Category	Mechanical & Engineering Specification	Operational & Efficiency Metrics	Active & Passive Safety Mitigation	Statutory British Standards & UK Building Regulations
Renewable Energy Infrastructure	Roof-mounted, sleek matte black Solar Photovoltaic (PV) arrays with optimized grid-inverters.	Maximizes localized green energy generation; hits municipal Net-Zero and Passivhaus criteria.	Rapid DC Shutdown: Inverters are equipped with automated arc-fault detection and emergency DC shutdown systems to protect emergency blue-light services during a site incident.	BS EN 61215 (Crystalline silicon PV modules) BS 7671 Section 712 (Solar photovoltaic power supply systems) MIS 3002 (MCS PV Standards)
Space & Water Heating	Factory-routed internal circuitry configured for low-emission Air Source Heat Pumps (ASHPs) .	Up to 70% reduction in tenant utility overheads compared to traditional electric heating layouts.	Externalized Thermal Load: All primary compressor units are housed in external, secure, tamper-proof acoustic enclosures completely separate from the living envelope.	BS EN 14511 (Air conditioners and heat pumps test standards) MIS 3005 (MCS Heat Pump Standards) Part P (Electrical Safety) & Part G (Sanitation/Hot Water)
Indoor Ventilation & Air Quality	High-efficiency Mechanical Ventilation with Heat Recovery (MVHR) loop ventilation networks.	Eliminates condensation, damp, and structural mold; ensures a healthy internal living environment.	Automated Smoke Shut-Off: Integrated with the central fire alarm matrix. If smoke is detected anywhere in the building, dampers instantly seal the MVHR ducts to prevent smoke migration between rooms.	BS EN 13141-7 (Performance testing of MVHR mechanical ventilation) Part F (Ventilation: System 4 design compliance) BRE Digest 398

Electrical Distribution & Smart Control	Low-voltage LED lighting arrays and pre-wired smart digital thermostats connected to central consumer units.	Eliminates on-site mechanical and electrical tracking errors through 100% factory-fitted wiring.	Arc-Fault Detection (AFDDs): All main consumer units are fitted with Arc-Fault Detection Devices as standard to actively monitor lines and cut power before an electrical fault can spark a fire.	BS 7671:2018+A2:2022(IET Wiring Regulations 18th Edition) BS EN 62606(General requirements for arc fault detection devices) Part P (Electrical Safety)
--	---	---	---	--

Section C: Asset Protection, Underwriting, and Compliance

Legal & Compliance Category	Statutory Standard & Asset Accreditation	Institutional Funding & Lender Impact	Long-Term Lifecycle Protection Guarantee	Statutory British Standards & UK Building Regulations
Structural Design Life	Engineered to fully meet and support a 60-year BOPAS (Buildoffsite Property Assurance Scheme) durability standard.	Unlocks access to public sector capital grants, municipal funding channels, and social housing frameworks.	Structural Longevity: Calculated through rigorous engineering testing to simulate 60 years of extreme UK weather conditions without degradation.	BOPAS Durability Assessment Criteria BLP/CML (Council of Mortgage Lenders compliance framework)
Asset Insurance Fit	Fully compliant with underwriting criteria for NHBC (Buildmark), Premier Guarantee, and LABC .	Ensures the completed homes are completely mortgageable and tradeable on public or private registries.	Third-Party Security: Guarantees that the structural asset satisfies the exact same risk parameters as traditional brick-and-block builds.	NHBC Standards Chapter 6.11 (Modern Methods of Construction) Premier Guarantee Technical Manual Section 14 (MMC validation)
Manufacturer Warranty	Backed by the explicit X-Gen Homes Internal Lifetime Structural Manufacturer Warranty .	Protects public funds and local authorities from the financial fallout of legacy supplier insolvencies.	Direct Structural Backup: Provides absolute coverage on the internal steel framing and core structural panel integrity for the building's entire operational lifetime.	Consumer Rights Act 2015 (Defects liability frameworks) Defective Premises Act 1972 (Section 1 structural fitness compliance)

3. Engineering Performance Benchmarking Example

This comparison maps the X-Gen® High-Density Smart System directly against standard UK Building Regulations and legacy timber/straw panel methods (such as those previously utilized by Agile Property and Homes) to demonstrate asset enhancement for local authorities:

Thermal Transmittance (U-Value): Legacy timber/straw panels achieved a wall U-value of roughly 0.13 W/m²K. The X-Gen closed-cell core system drops this to **0.11 W/m²K**, further lowering tenant heating bills.

Structural Envelope Integrity: While straw-bale frameworks require intense, manual moisture monitoring during on-site assembly to prevent internal rot, X-Gen's **moisture-impermeable polymer core** allows components to sit exposed on-site without any risk of structural degradation.

Fire Propagation Risk: Traditional organic structural insulations carry a standard Euroclass E rating before external rendering. X-Gen's light-gauge steel combined with fire-retardant composites provides a non-combustible foundation matching **Class A1/B structural safety standards**, drastically simplifying the building sign-off process for municipal safety officers.

4. Consultation & Framework Inquiries

To request full structural engineering blueprints, localised acoustic calculation data, or to schedule an initial framework consultation with our projects division, please reach out to our team:

Procurement Inbox: project@x-genhomes.com

Commercial Hotline: +44 7354 332082

Web Portal: x-genhomes.com



www.x-genhomes.com

Find Us



Spain | UK | Philippines



+44 7354332082



project@x-genhomes.com