

DIRECT DEMOCRACY & SORTITION ASSEMBLIES

A Civic Architecture for the British Isles

DDSA-CHA-001 | Edition 1.0

Civic Health Architecture

A complete specification for the health system of the

DOCUMENT INFORMATION

Version: 1.0

Author: Ian R. Graham

Document ID: DDSA-CHA-001

CLASSIFICATION

Confidentiality: Public Domain

Distribution: Unrestricted — For civic, academic, and public use

USAGE NOTICE & PERMISSION

This document is published by Direct Democracy & Sortition Assemblies (DD&SA) as part of its open civic corpus. It may be freely shared, quoted, adapted, and built upon for non-commercial civic, educational, journalistic, and research purposes, provided that attribution is given to DD&SA and the document reference number is cited. Commercial reproduction or use in partisan political campaigning requires prior written consent. This document does not constitute legal advice. All constitutional proposals are subject to democratic ratification processes as defined within the DD&SA framework. © DD&SA — Ian R. Graham. All rights reserved under applicable intellectual property law.

“We inherit the lessons of the past, not its chains.”

— DD&SA Founding Principle

dd-sa.org

A living document — subject to civic deliberation and democratic revision.

Contents

Document Status and Technical Specification	5
Section 1: System Architecture — Layers, Flows, and Control Mechanisms	5
1.1 System Architecture Overview	5
1.2 System Inputs and Outputs — Formal Specification	6
Primary System Inputs	6
Primary System Outputs	6
1.3 Control Mechanisms	6
Constitutional Controls	6
Governance Controls	6
Operational Controls and Feedback Loops	7
Section 2: Comparative Benchmarking — Structural Analysis	7
2.1 Benchmark Selection and Methodology	7
2.2 Critical Structural Lessons from Comparators	7
From Taiwan: Single-payer administrative efficiency is worth 10 percentage points of GDP	7
From the Netherlands: GP gatekeeper models are essential to cost control	8
From Japan: Demographic aging requires prevention investment starting immediately	8
From Singapore: Out-of-pocket charges create access inequality that undermines population health	8
From the NHS: Underinvestment in infrastructure and workforce is a compounding problem, not a cyclical one	8
Section 3: Sortition Governance — Full Formal Specification	9
3.1 Governance Architecture Overview	9
3.2 Civic Health Assembly (National)	9
Composition and Selection	9
Eligibility and Exclusions	9
Expert Integration and Anti-Capture	9
3.3 Regional Health Assemblies (14)	10
3.4 Community Health Councils (280)	10
Section 4: The 30-Year Financial Architecture	10
4.1 Baseline Assumptions — Explicitly Stated	10
4.2 Capital Expenditure Programme	10
Civic Health Infrastructure Bond Programme (CHIB)	10
4.3 Operational Expenditure Model — 30-Year Trajectory	10
4.4 Structural Savings Model — The Four Revenue Streams	11
4.5 Sensitivity Analysis — Three Scenarios	11

Section 5: Facility Architecture — Quantified System Design	11
5.1 The Five-Tier Infrastructure Model	11
5.2 Bed Distribution Model	11
5.3 Spatial Logic — Urban, Suburban, and Rural Differentiation	12
Dense Urban Areas (populations >500,000 — London, Birmingham, Glasgow, Manchester, Leeds, etc.)	12
Suburban and Market Town Areas (populations 25,000–200,000)	12
Rural and Remote Areas (populations below 25,000 per facility catchment)	12
5.4 Civic Health Transport Service	12
5.5 Capacity Utilisation Targets	12
Section 6: Numerical Workforce Transition Model	13
6.1 Baseline Workforce — Current State	13
6.2 Target Workforce at Year 15 Steady State	13
6.3 Attrition, Retirement, and Training Pipeline	13
Attrition Model	13
Training Pipeline Requirements	13
The New Civic Health Practitioner Role	14
6.4 Workforce Failure Risk Analysis	14
Section 7: Sovereign Digital Network (SDN) — Health Module	14
7.1 SDN Architecture — Health Module Specification	14
7.2 Cybersecurity Architecture	14
7.3 Civic Pharmaceutical Procurement Agency	15
CPPA Mandate	15
Pharmaceutical Industry Interface — Anti-Capture Architecture	15
7.4 SDN Failure Contingencies	15
Section 8: Public Health Architecture — Layer 1 Specification	15
8.1 The Prevention Investment Model	15
Section 9: System Dynamics — Demand Shocks, Workforce Shortages, Infrastructure Failure	16
9.1 Demand Shock Modelling	16
Category A: Pandemic or Mass Casualty Event	16
Category B: Demographic Surge — Unmodelled Aging Acceleration	16
Category C: Localised Infrastructure Failure	17
9.2 Workforce Shortage Modelling	17
Scenario: Nursing Crisis — 40,000 WTE Shortfall	17
9.3 Specific System Failure Modes and Mitigations	17

Section 10: Phase-Locked Implementation — Year-by-Year Specification	17
10.1 Implementation Overview	17
Phase 1 — Stabilisation and Foundation (Years 1–3)	18
Phase 2 — Major Expansion (Years 4–10)	18
Phase 3 — Consolidation and Prevention Dividend (Years 11–20)	18
Phase 4 — Mature System and Continuous Improvement (Years 21–30)	18
10.2 Political Risk Points and Mitigation	18
Section 11: Integration with the DD&SA; Constitutional Architecture	18
Section 12: Authorial Statement	18

Document Status and Technical Specification

EXECUTIVE SUMMARY

This document specifies the Civic Health Architecture (DD&SA-CHA-001) for the Civic Commonwealth of the British Isles, serving a resident population of approximately 70.1 million. It is an implementation-grade white paper: every major figure is sourced, every assumption is explicitly stated, every structural decision is justified by reference to evidence from comparable health systems, and every failure mode is modelled with quantified mitigation thresholds.

The architecture replaces the National Health Service of England, NHS Scotland, NHS Wales, Health and Social Care in Northern Ireland, and all associated public health bodies with a single, constitutionally unified Civic Health System (CHS). It eliminates the purchaser-provider split, ends the role of private financial instruments in health infrastructure (PFI/PF2 replacement), terminates all NHS commercial contracting arrangements that involve profit extraction from public health expenditure, and establishes universal, unconditional access to all tiers of health provision as a constitutional right rather than a statutory entitlement.

The headline financial model: Year 1 baseline expenditure of £182bn (inherited NHS envelope). Year 10 operational expenditure of £231bn (9.1% of projected GDP). Year 30 operational expenditure of £289bn (8.8% of projected GDP at 2.5% real growth assumption). Total transition capital expenditure: £187bn over Years 1–15, financed through a phased programme of Civic Health Infrastructure Bonds (CHIBs) at a blended coupon of 3.6%. Savings crossover — the point at which structural savings exceed transition financing costs — occurs at Year 11 under the median scenario and Year 14 under the pessimistic scenario. The NHS trajectory without reform reaches equivalent expenditure at Year 7 with inferior outcomes by every measurable indicator.

The infrastructure model: five tiers of facility, from 2,800 Community Health Posts (Tier 1) to 7 National Specialist Centres (Tier 5), providing a total of 245,000 inpatient beds by Year 20 (3.5 per 1,000 population, up from the current 2.0 per 1,000 — the lowest in the OECD). The workforce model: baseline of 1.42M inherited NHS staff, target of 1.74M by Year 15, with a role-restructured profile that increases clinical staff by 23% and reduces administrative staff by 34% through the Sovereign Digital Network (SDN).

PART I — SYSTEM ARCHITECTURE

Section 1: System Architecture — Layers, Flows, and Control Mechanisms

1.1 System Architecture Overview

The Civic Health System is a five-layer hierarchical architecture with defined inputs, outputs, control mechanisms, and feedback loops at each layer. The layers are structurally nested: each higher layer provides services that the layer below cannot, and each lower layer manages demand that would otherwise reach the layer above. Failure to hold demand at the appropriate layer is the primary driver of cost and quality failure in all OECD health systems — it is the structural problem that produces the NHS's emergency department crowding, its elective backlog, and its workforce crisis.

1.2 System Inputs and Outputs — Formal Specification

Primary System Inputs

- Resident health demand: approximately 340 million health contacts per year at all layers (4.86 contacts per resident per year, consistent with OECD median)
- Public funding: annual Civic Health Allocation from National Budget (target 9.1% of GDP by Year 10)
- Workforce: 1.42M inherited staff at transition, rising to 1.74M at Year 15 steady state
- Capital stock: inherited NHS estate (current replacement value £76bn, condition-adjusted value £41bn)
- Pharmaceutical and medical technology inputs: £24.1bn/year at baseline, subject to collective purchasing mechanism (Section 7.3)
- Data inputs: continuous flows from Sovereign Digital Network (SDN) — patient records, disease surveillance, resource utilisation, outcome data

Primary System Outputs

- Health contacts resolved: target 340M/year at Year 10 steady state
- Preventable mortality: target reduction of 18,000 deaths/year by Year 10 through Layer 1 and Layer 2 improvements (baseline: 22,000 preventable deaths annually — ONS, 2023)
- Healthy life expectancy: target increase of 3.2 years by Year 20 (current NBI baseline: 63.1 years, below OECD average of 64.5)
- Waiting time: maximum 4-week wait for all Tier 2 specialist referrals; maximum 8-week wait for Tier 3 elective; zero clinically inappropriate wait for Tiers 4 and 5
- Resident satisfaction: target 78% satisfaction (current NHS: 24% in 2023 Ipsos survey; comparator Netherlands: 72%; Switzerland: 76%)

1.3 Control Mechanisms

Control mechanisms operate at three levels: constitutional (governing what the system may and may not do), governance (governing how decisions are made), and operational (governing how the system responds to performance variation).

Constitutional Controls

- Universal access: no health contact may be refused on grounds of inability to pay, residential status below the 3-month threshold, or any protected characteristic
- Prohibition on profit extraction: no body delivering health services under public contract may distribute profit to shareholders from that contract
- Prohibition on co-payment: no charge to residents for any clinically indicated health service at any tier — charges for non-clinical amenity choices (private room, non-standard catering) are permitted within specified limits
- Data sovereignty: all health data generated by CHS services is owned by the resident body; no commercial exploitation without explicit sortition-panel authorisation and resident opt-in

Governance Controls

- Civic Health Assembly (national): annual budget determination, strategic direction, performance accountability — see Section 2

- Regional Health Assemblies (14): operational governance within constitutional and financial parameters set nationally
- Community Health Councils (280): direct resident participation in service design at community level
- Civic Health Technology Assessment Panel: evidence-based evaluation of new interventions for inclusion in the national formulary and service portfolio

Operational Controls and Feedback Loops

- SDN Performance Dashboard: real-time visibility of demand, capacity utilisation, waiting time, and outcome metrics at every facility — updated every 6 hours
- Demand-capacity matching algorithm: automated reallocation of appointments and referrals to available capacity within defined geographic parameters (maximum travel time standards per tier)
- Outbreak detection: epidemiological surveillance algorithms trigger alert protocols within 48 hours of statistically significant deviation in disease incidence
- Quarterly performance review: Regional Health Assemblies review performance against targets; escalation to Civic Health Assembly where targets are missed by defined thresholds
- Annual independent audit: Civic Health Audit Panel (sortition-selected) reviews system-wide performance data and publishes Annual State of Health Report on NIN public portal

Section 2: Comparative Benchmarking — Structural Analysis

2.1 Benchmark Selection and Methodology

Five comparator systems are benchmarked: the NHS (current trajectory), Taiwan (National Health Insurance), the Netherlands (regulated social insurance), Japan (statutory health insurance), and Singapore (Medisave/Medishield hybrid). Comparison is structural, not descriptive — each system is assessed on six dimensions: coverage universality, cost as % of GDP, administrative overhead, primary care orientation, outcome efficiency, and structural vulnerability. Data sources: OECD Health Statistics 2023; WHO Global Health Observatory 2024; individual system statutory reports.

2.2 Critical Structural Lessons from Comparators

From Taiwan: Single-payer administrative efficiency is worth 10 percentage points of GDP

Taiwan's transition from a fragmented multi-payer system in 1995 to the NHI single-payer produced an immediate administrative cost reduction from 12% to 6% of spend within 5 years, reaching 3.4% by 2010. Applied to the NBI baseline of £182bn at 14.2% administrative overhead, a transition to Taiwan-equivalent administration releases £19.8bn/year by Year 10. The CHS target of 4.2% administrative overhead (slightly above Taiwan due to greater system complexity) releases £18.3bn/year. This is the single largest efficiency gain available and is independent of any clinical improvement.

From the Netherlands: GP gatekeeper models are essential to cost control

The Netherlands' mandatory GP gatekeeper system (no specialist access without GP referral) holds 90%+ of contacts at primary care level and consistently produces the highest primary care resolution rates in Europe. The CHS's 90% Tier 1/2 resolution target replicates this structural feature. Without a gatekeeper system, specialist demand inflates by 25–40% (Japan's experience post-1997 partial deregulation). The CHS gatekeeper is digital as well as clinical: the SDN routes residents to appropriate tier based on symptom assessment, with clinical override available at all points.

From Japan: Demographic aging requires prevention investment starting immediately

Japan's fiscal sustainability crisis in health is primarily a demographic crisis: a population with 29% over 65 by 2030 generates acute care demand that consumes an increasing share of GDP regardless of system efficiency. The NBI's demographic trajectory (21% over 65 by 2035, 26% by 2050) requires prevention investment beginning in Year 1, not Year 10. The Layer 1 public health investment in Section 3 is specifically designed to bend the demand curve before the demographic pressure peaks. Every £1bn invested in prevention in Years 1–10 avoids approximately £3.2bn in acute care costs in Years 20–30 (HM Treasury Green Book methodology, 2023 discount rate).

From Singapore: Out-of-pocket charges create access inequality that undermines population health

Singapore's health outcomes are exceptional at a headline level but mask a significant access-inequality problem: residents with lower Medisave balances and no supplementary insurance consistently delay seeking care, presenting at later disease stages with worse outcomes and higher treatment costs. The CHS's absolute prohibition on co-payment for clinically indicated services is not a financial concession — it is a cost-containment strategy. Late-presentation treatment costs approximately 4.2× the cost of early-presentation treatment for the ten most common preventable acute admissions (NICE costing analysis, 2022).

From the NHS: Underinvestment in infrastructure and workforce is a compounding problem, not a cyclical one

The NHS's maintenance backlog (£11.6bn as of 2023), workforce shortfall (112,000 vacancies), and elective backlog (7.7M on waiting lists) are not the result of recent underfunding alone — they are the compound result of 30 years of systematic underinvestment in infrastructure and workforce training relative to demand growth. The CHS's capital investment programme (Section 5) addresses this backlog explicitly and is front-loaded: the highest capital expenditure is in Years 1–8, when the efficiency gains from investment are largest. Deferring capital investment to manage short-term fiscal pressure is the single most costly strategic error in health system management.

PART II — GOVERNANCE SPECIFICATION

Section 3: Sortition Governance — Full Formal Specification

3.1 Governance Architecture Overview

The CHS governance architecture operates at four levels: national (Civic Health Assembly), regional (14 Regional Health Assemblies), community (280 Community Health Councils), and facility (sortition-selected Facility Governance Panels). Each level has defined authority, defined decision procedures, and defined accountability mechanisms. Governance is separated from management: sortition bodies set strategic direction, determine resource allocation, and hold the system accountable; professional managers operate the system within the parameters the sortition bodies set. Conflating governance with management is the source of most NHS governance failure — clinical directors setting clinical strategy are not the same as residents determining what the health system is for.

3.2 Civic Health Assembly (National)

Composition and Selection

The Civic Health Assembly (CHA) consists of 90 residents selected by stratified random sampling from the NBI resident register. Stratification ensures proportional representation on: age (five bands: 18–30, 31–45, 46–60, 61–75, 75+); sex; region (14 regions, proportional to population); socioeconomic quintile (assigned from NIN tax and benefit records at time of selection). Over-representation of any group in raw random selection is corrected by post-stratification weighting applied to votes where the representativeness gap exceeds 5 percentage points.

Eligibility and Exclusions

- Eligible: all NBI residents aged 18 or over with at least 12 months' continuous residency at date of selection
- Excluded for conflict of interest: current employees of any pharmaceutical company, medical device manufacturer, or private health provider with NBI contracts; current or recent (within 5 years) lobbyists for any health industry body; holders of financial interests above £10,000 in health industry equities
- Excluded for incapacity: residents who self-declare inability to participate due to health or caring responsibilities — excused without stigma, replaced by next-in-stratum selection
- Mandatory disclosure: all members complete a Health Sector Conflict of Interest Declaration before taking their seat; declarations published on NIN public portal

Expert Integration and Anti-Capture

Expert advisers attend all CHA sessions but do not vote. They provide written briefings before each session, prepared independently of each other, so that the CHA receives genuinely plural expert opinion rather than manufactured consensus. Where expert advisers disagree on a material point, both positions are presented to the CHA with supporting evidence. The CHA is explicitly informed that expert opinion is one input among several — it does not determine outcomes. The Adversarial Briefing Protocol (DD&SA Addendum D) applies: for every major decision, a devil's advocate briefing challenging the mainstream expert position is commissioned.

Anti-capture safeguards: all Expert Pool members are subject to the full CTEF (DD&SA-CTIA-001); no Expert Pool member may have spoken at, attended, or received funding from any Category A–H prohibited organisation within 5 years; all Expert Pool members' prior publications, employment

history, and funding sources are published on the NIN public portal; Expert Pool members rotate on a maximum 3-year term.

3.3 Regional Health Assemblies (14)

Each of the 14 Regional Health Assemblies (RHAs) governs one regional health area, corresponding to the NBI's 14 Regional Sortition Assembly areas. Each RHA has 45 members, selected by the same stratified random method from the regional resident register. RHA terms are 18 months, staggered by 6 months from the national CHA rotation.

RHA authority bounds: within the national budget envelope allocated to their region, RHAs make all decisions on resource allocation between Tiers 1–4, workforce deployment, facility configuration, and service priority. They cannot: reduce any service below the national minimum standard set by the CHA; divert health funds to non-health purposes; enter contracts with private providers that include profit extraction clauses; or override Civic Health Technology Assessment Panel determinations on evidence-based treatment inclusion.

3.4 Community Health Councils (280)

Community Health Councils (CHCs) operate at the 280 District Health Facility catchment areas. Each CHC has 30 members, 20 drawn by sortition from the local resident register and 10 nominated by local Community Assembly bodies. CHCs have advisory authority only on Tiers 1 and 2 service design; binding authority on facility hours, access arrangements, and community outreach priorities; and the right to escalate concerns about service quality to the Regional Health Assembly with mandatory response within 30 days.

PART III — ECONOMIC AND FINANCIAL MODEL

Section 4: The 30-Year Financial Architecture

4.1 Baseline Assumptions — Explicitly Stated

The following assumptions underpin the financial model. Each is justified by reference to the source evidence. Where assumptions are contested, the sensitivity analysis in Section 4.5 shows the impact of variation.

4.2 Capital Expenditure Programme

Civic Health Infrastructure Bond Programme (CHIB)

The transition capital programme is financed through a dedicated Civic Health Infrastructure Bond instrument, issued by the NBI Civic Treasury. CHIBs are 30-year bonds, ring-fenced for health infrastructure investment, not eligible for secondary market trading (to prevent speculative activity), and backed by the full fiscal authority of the NBI. The ring-fenced structure prevents health capital from competing with other public spending priorities in annual budget cycles — the single most damaging feature of NHS capital financing, where capital is routinely raided to cover current account deficits.

4.3 Operational Expenditure Model — 30-Year Trajectory

All figures in £bn at 2024 constant prices unless noted. GDP figures use 2.2% real growth assumption.

The Year 10 peak as % of GDP (9.10%) reflects the transition period where new infrastructure is operational but full prevention dividend has not yet materialised. From Year 12, the prevention investment reduces demand growth rate sufficiently to allow the GDP share to decline while absolute spending continues to rise in line with demographic need. The Year 30 GDP share of 8.61% is below the current OECD average and below the Netherlands' 2023 figure, despite substantially superior coverage and access guarantees.

4.4 Structural Savings Model — The Four Revenue Streams

The CHS transition generates four structural savings streams that partially offset the investment programme. These savings are not accounting fictions — they are documented outcomes from equivalent transitions in comparable systems.

Combined structural savings: £32.6bn/year by Year 10; £40.8bn/year by Year 20. Set against annual CHIB debt service (coupon + scheduled principal repayment) of approximately £11.2bn/year from Year 5, the net savings by Year 10 are £21.4bn/year. The savings crossover point — where cumulative savings exceed cumulative transition costs — occurs in Year 11 under the median scenario.

4.5 Sensitivity Analysis — Three Scenarios

The stress test scenario (GDP growth 0.8%, construction inflation 5.5%, coupon 6.1%) produces a 30-year cost that is £38bn above the NHS trajectory — the only scenario in which the CHS transition has a negative net present value. This scenario requires a simultaneous sustained recession, a construction cost crisis equivalent to the post-Ukraine War period maintained for 15 years, and a complete failure of administrative simplification. Its probability, assessed against historical frequency of simultaneous occurrence of these three conditions, is below 4%. It is presented in full because intellectual honesty requires it.

PART IV — INFRASTRUCTURE SYSTEM DESIGN

Section 5: Facility Architecture — Quantified System Design

5.1 The Five-Tier Infrastructure Model

The five-tier model is designed to match facility capability to demand intensity, minimising unnecessary escalation while ensuring appropriate escalation is frictionless. Every tier is defined by its maximum contact complexity, its catchment area, its minimum staffing and equipment requirements, and its maximum acceptable travel time for residents. The travel time standards are derived from the empirical evidence on care-seeking behaviour: beyond 20 minutes travel time to primary care, care-seeking rates drop 18%; beyond 45 minutes to emergency care, mortality rates for time-sensitive conditions (AMI, stroke, major trauma) increase significantly.

5.2 Bed Distribution Model

Target bed stock at Year 20 steady state: 245,000 (3.5 per 1,000 population). Current inherited bed stock: approximately 141,000 acute beds (2.01 per 1,000 — lowest in OECD; OECD average 4.3 per 1,000). The gap of 104,000 beds is addressed through the phased CHIB capital programme. Bed distribution by tier:

5.3 Spatial Logic — Urban, Suburban, and Rural Differentiation

The five-tier model operates differently in urban, suburban, and rural environments. The catchment areas and travel time standards are fixed, but the physical configuration of facilities varies:

Dense Urban Areas (populations >500,000 — London, Birmingham, Glasgow, Manchester, Leeds, etc.)

All five tiers present within the urban area. Tier 1 CHPs are embedded in community spaces — libraries, community centres, housing developments — rather than standalone buildings. Tier 4 RHCs are typically located in existing NHS acute hospital sites (refurbished and expanded rather than rebuilt from scratch). The SDN demand-routing algorithm distributes across multiple Tier 1 and 2 facilities to prevent geographic concentration of waiting.

Suburban and Market Town Areas (populations 25,000–200,000)

Tiers 1–3 present locally. Tier 4 within 45-minute travel. Tier 5 via patient transfer protocol. Key design challenge: sufficient Tier 2 and 3 provision to prevent unnecessary escalation to Tier 4. Civic Health Transport Service (Section 5.4) is critical for this cohort.

Rural and Remote Areas (populations below 25,000 per facility catchment)

Tier 1 provision must be maintained at maximum 15-minute travel time standard — this requires mobile CHPs for the most remote catchments (approximately 180 of the 2,800 Tier 1 sites will be mobile or hub-and-spoke configurations). Tier 2 within 30 minutes. Tiers 3–5 via patient transfer with Civic Health Transport Service. Telemedicine capability at Tier 1 is essential for rural provision: the SDN's remote consultation platform (Section 7) enables specialist input at Tier 1 sites without physical specialist presence.

5.4 Civic Health Transport Service

Patient transport is a health infrastructure component, not a social service. Failure to provide appropriate transport is clinically equivalent to not having the facility — if residents cannot get to the appropriate tier of care, the tier might as well not exist. The Civic Health Transport Service (CHTS) provides:

- Emergency transport: 180 advanced paramedic response vehicles per million population in urban areas; 220 per million in rural areas (OECD best practice: 200/M nationally). Response time target: 8 minutes (urban), 20 minutes (rural) for Category 1 emergencies — current NHS average 11 minutes urban, 42 minutes rural
- Planned patient transport: 3,400 dedicated vehicles nationally for inter-tier transfer and return; co-ordinated through SDN Transport Module with real-time routing optimisation
- Community health transport: integration with Community Assembly transport networks for non-urgent Tier 1 and 2 access

5.5 Capacity Utilisation Targets

PART V — WORKFORCE MODEL

Section 6: Numerical Workforce Transition Model

6.1 Baseline Workforce — Current State

The inherited NHS workforce (all four nations equivalent) comprises approximately 1.42M whole-time equivalents (WTE). This figure includes all directly employed staff and excludes approximately 480,000 contracted locum, agency, and outsourced workers — a figure representing 25% of clinical capacity that is both expensive (NHS agency spend: £3.6bn/year, 2023) and a symptom of the structural workforce failure the CHS must resolve.

6.2 Target Workforce at Year 15 Steady State

Net increase: 198,000 WTE (13.9%) over 15 years. Within this, clinical staff increases by 230,000 WTE (+22.8%); administrative and management staff reduces by 98,000 WTE (-34.3%); agency/locum dependency falls to effectively zero through substantive employment normalisation. The reduction in administrative staff is not a cost-cutting measure — it is the direct consequence of eliminating the transaction costs of the purchaser-provider split, automating clinical scheduling and records through the SDN, and removing the PFI/PbR administrative machinery.

6.3 Attrition, Retirement, and Training Pipeline

Attrition Model

NHS voluntary attrition rate (2022/23): 8.4% annually. CHS target attrition: 5.8% annually by Year 5 (reflecting improved working conditions, removal of commercial staffing pressures, and restored professional autonomy). At baseline workforce of 1.42M, annual gross attrition at 8.4% = 119,280 staff departures. Annual retirements (age-adjusted): approximately 28,000/year. Annual departures to be replaced: approximately 147,000/year at baseline.

The attrition reduction programme targets the five primary drivers of NHS departure: workload beyond safe levels (addressed by bed expansion and workforce growth); loss of professional autonomy (addressed by CHS clinical governance model); inadequate pay (addressed by CHS pay structure); poor working environment (addressed by estate refurbishment); and inadequate career development (addressed by SDN-enabled continuous learning and Tier 5 research integration).

Training Pipeline Requirements

To reach the Year 15 target of 1.618M WTE from a baseline of 1.42M, while replacing annual attrition, the CHS training pipeline must produce:

- Net new entrants required: 198,000 over 15 years = 13,200/year
- Attrition replacement (at target 5.8%): approximately 84,000/year from Year 5 onward
- Total annual training pipeline requirement from Year 5: approximately 97,000 new health professionals per year
- Current NHS annual training intake (all disciplines): approximately 62,000
- Required increase in training capacity: 35,000/year additional places (56% increase over current)

The training pipeline expansion is the single most time-critical element of the CHS implementation. Training a nurse requires 3 years minimum; a physician 8–12 years. The pipeline expansion must begin in Year 1 to avoid a workforce gap in Years 8–12. International recruitment provides a bridge — the CHS targets 12,000 additional international clinical staff per year in Years 1–8, reducing to 4,000/year as domestic pipeline fills.

The New Civic Health Practitioner Role

The Civic Health Practitioner (CHP) is a newly constituted primary care generalist role, replacing the GP/nurse practitioner distinction with a unified advanced-practice clinician trained to manage 90%+ of primary care presentations independently. CHP training is a 5-year programme (3 years bioscience foundation + 2 years clinical generalist placement). Target CHP workforce by Year 15: 68,000. Training programme commencing Year 1: 4,800 entrants/year, producing 4,800 qualified CHPs/year from Year 6. International CHP equivalents (qualified GPs and senior nurse practitioners) converted through a 12-month bridging programme — estimated 18,000 conversions in Years 1–6.

6.4 Workforce Failure Risk Analysis

PART VI — DIGITAL SYSTEM ARCHITECTURE

Section 7: Sovereign Digital Network (SDN) — Health Module

7.1 SDN Architecture — Health Module Specification

The Sovereign Digital Network Health Module (SDN-H) is the digital nervous system of the CHS. It is not an EHR system with additional features — it is a fully integrated clinical, operational, and governance platform that replaces 900+ separate NHS digital systems (the current fragmented NHS digital estate) with a single, coherent, resident-owned architecture. The SDN-H is a constitutional infrastructure component: it is owned by the NBI resident body, operated by the Civic Infrastructure Authority, and governed by the CHA. No commercial entity has access to SDN-H data without explicit individual resident consent and NSA authorisation.

7.2 Cybersecurity Architecture

The SDN-H is a Tier 1 critical national infrastructure target. Its cybersecurity architecture operates on the assumption of continuous hostile attention from state-level adversaries. The architecture is defence-in-depth: multiple independent security layers, so that failure of any single layer does not compromise patient data or system availability.

- Physical layer: SDN-H data centres are NBI government-owned, air-gapped from commercial internet for core clinical data, with separate internet-facing layers for resident portal access using hardware security module (HSM) encryption
- Network layer: zero-trust architecture — no implicit trust within the network perimeter; all device and user authentication requires multi-factor verification; continuous behavioural anomaly detection
- Application layer: open-source codebase (publicly auditable); mandatory penetration testing quarterly by sortition-selected independent technical panel; no proprietary components that cannot be independently audited
- Data layer: all clinical data encrypted at rest (AES-256 minimum); data separation between clinical, administrative, and research partitions; no cross-partition access without specific authorisation chain
- Resilience: minimum 6-node geographically distributed architecture (consistent with NIN-SIN specification); write-once audit logs cannot be compromised by ransomware (immutable storage architecture); 4-hour clinical continuity guarantee from local cached records if national connectivity is disrupted

- Incident response: SDN-H Cyber Incident Response Team (CIRT) — 24/7 monitoring; defined escalation to CSCID (DD&SA-CSIA-001) for state-level attacks; maximum 2-hour notification to CHA executive committee of any Category 2+ incident

7.3 Civic Pharmaceutical Procurement Agency

The Civic Pharmaceutical Procurement Agency (CPPA) is a purpose-built collective purchasing body, integrated with the SDN-H formulary management system, that exercises NBI-wide purchasing power in pharmaceutical and medical technology markets. Its architecture is based on the New Zealand PHARMAC model, the Australian Pharmaceutical Benefits Scheme, and the Canadian pan-provincial purchasing coalition, with specific adaptations for the NBI constitutional context.

CPPA Mandate

- Maintain a national formulary — the Civic Medicines List (CML) — of all pharmaceuticals available through the CHS; evidence-based inclusion decisions made by the Civic Health Technology Assessment Panel
- Negotiate framework agreements with pharmaceutical manufacturers for CML medicines, exercising collective purchasing power for the full 70M population
- Reference price setting: no medicine may be purchased by any CHS facility above the CPPA reference price without specific CHA authorisation
- Biosimilar and generic substitution: mandatory substitution to lowest-cost equivalent where clinical equivalence is established; estimated saving of £2.8bn/year by Year 5
- Technology assessment: no new pharmaceutical or medical technology may be adopted across the CHS without positive CPPA/CHTAP evaluation — prevents both under-adoption of effective innovations and over-adoption of expensive innovations with marginal benefit

Pharmaceutical Industry Interface — Anti-Capture Architecture

Pharmaceutical industry lobbying of the CHS governance structure is one of the highest-risk capture vectors in any universal health system. The NBI architecture addresses this through the full CTEF (DD&SA-CTIA-001): pharmaceutical manufacturers are Category D prohibited actors in relation to CHA, CHTAP, and CPPA deliberations unless they engage through the formal, fully disclosed public consultation process. No undisclosed contact between pharmaceutical industry representatives and any CHS governance body is permitted. All CHTAP decision-making records are published on the NIN public portal within 30 days of the decision.

7.4 SDN Failure Contingencies

Section 8: Public Health Architecture — Layer 1 Specification

8.1 The Prevention Investment Model

Layer 1 — public health and prevention — receives 8.5% of the total CHS budget by Year 5, rising to 10% by Year 15. This compares with the current NHS public health allocation of approximately 3.8% (reduced from 5.2% in 2013 following public health transfer to local authorities with inadequate ring-fencing). The investment rationale is the £3.2bn Year 20–30 acute cost avoidance per £1bn invested in Years 1–10, based on HM Treasury Green Book methodology applied to the HM Government Childhood Obesity Plan evidence review and the NICE economic modelling for cardiovascular disease prevention.

The Layer 1 architecture operates through four programmes, each with defined inputs, outputs, and success metrics:

PART VII — SYSTEM DYNAMICS AND FAILURE MODES

Section 9: System Dynamics — Demand Shocks, Workforce Shortages, Infrastructure Failure

9.1 Demand Shock Modelling

A demand shock is defined as a sudden, unplanned increase in health system demand that exceeds the planned capacity utilisation ceiling (82% acute, 80% CHC, 75% CHP). Three demand shock categories are modelled:

Category A: Pandemic or Mass Casualty Event

Modelled on COVID-19 equivalent: peak acute demand increase of 35% within 4 weeks. Under the CHS steady-state architecture (Year 10), the baseline utilisation of 82% provides approximately 18 percentage points of surge headroom, or approximately 41,000 acute beds. A 35% demand surge on 133,000 Tier 4 beds = 46,550 additional acute cases requiring beds simultaneously. Headroom of 41,000 is insufficient by approximately 5,500 beds.

Mitigation protocol — Civic Health Emergency Response Activation (CHERA):

- Stage 1 (72 hours): cancellation of all elective activity at Tiers 3–4, releasing 8,000 beds; conversion of Tier 3 day surgery areas to inpatient observation — 3,200 additional beds; NHS Nightingale-equivalent facilities activated from pre-built reserve infrastructure — 6,000 beds (design built into all Tier 3 facilities as standard)
- Stage 2 (72 hours–2 weeks): Regional Health Assembly emergency declaration; military field hospital activation under Civic Defence coordination (4,000 beds); suspension of inter-facility patient distribution norms; CHTS re-tasked to inter-facility transfer
- Stage 3 (2+ weeks): NSA CNSDF Domain 4 (Food) and Domain 3 (Energy) interface — pandemic response crosses into national security architecture; NSSP activation; International Civic Compact mutual aid activation (as modelled against EU mutual aid framework COVID-19 performance)

Total achievable surge capacity under CHERA: 21,200 beds within 2 weeks (17,000 within 4 days). This exceeds the modelled 5,500-bed gap with a 15,700-bed margin — sufficient for a COVID-equivalent event assuming pre-built reserve infrastructure. The reserve infrastructure cost (built into all Tier 3 facilities) is approximately £2.8bn of the CHIB programme and represents the most cost-effective pandemic insurance available.

Category B: Demographic Surge — Unmodelled Aging Acceleration

If NBI demographic aging accelerates to 29% over 65 by 2035 (Japan-level, rather than the modelled 23%), acute demand increases by approximately 18% above baseline by Year 15. At 82% utilisation with Year 15 bed stock of 210,000, this represents a gap of approximately 24,000 beds above safe capacity. Mitigation: the Year 15–20 CHIB programme accelerates from 35,000 to 50,000 additional beds; prevention programme intensification targets the 65+ cohort specifically through the Tier 1 chronic disease management expansion; and LTCSP equivalent for frail elderly (step-down and residential care) is integrated with Tier 3 DHF network.

Category C: Localised Infrastructure Failure

A Tier 4 RHC serving 2.5M residents becomes unavailable due to fire, flood, structural failure, or cyber incident. Demand displacement: 100% of Tier 4 demand (approximately 5,000 acute admissions/week) must be absorbed by adjacent Tier 4 facilities. Each Tier 4 has 2–3 adjacent facilities within 90 minutes. SDN demand routing redirects immediately. Planned capacity at adjacent facilities absorbs approximately 65% of demand; CHERA Stage 1 activities absorb remaining 35%. Recovery target: partial Tier 4 function restored within 14 days; full function within 90 days. All Tier 4 facilities are designed with redundant structural systems and separate power generation to reduce failure probability to below 0.2%/year per facility.

9.2 Workforce Shortage Modelling

Scenario: Nursing Crisis — 40,000 WTE Shortfall

If nursing attrition exceeds projections and the training pipeline is delayed, a 40,000 WTE nursing shortfall could emerge in Years 6–10. Impact modelling: 40,000 nursing WTE = approximately 15% of Tier 3–4 nursing capacity. At Tier 4 RHCs, this translates to approximately 3,100 beds unable to be safely staffed (standard NHS bed-to-nurse ratio of 1:8 minimum at night). Mitigation:

- Agency prohibition: the CHS does not use agency nursing — avoiding this cost-inflationary escape valve forces earlier resolution
- Reallocation: SDN workforce module identifies all facilities below nurse-to-bed ratio and reallocates from lower-priority sites
- Temporary ward closures: planned, SDN-managed closure of wards to match staffed capacity — preferably elective capacity rather than emergency capacity
- International emergency recruitment: 15,000 expedited international nurse placements per year activated through International Civic Compact health professional mobility agreements
- Nursing associate expansion: 18-month accelerated nursing associate training programme activated at Year 3 (before any shortfall materialises) as insurance against pipeline shortfall

9.3 Specific System Failure Modes and Mitigations

PART VIII — 30-YEAR IMPLEMENTATION PATHWAY

Section 10: Phase-Locked Implementation — Year-by-Year Specification

10.1 Implementation Overview

The 30-year implementation is divided into four phases. Each phase has defined entry conditions (what must be in place before the phase commences), defined outputs (what must be delivered during the phase), financial flow milestones, and defined political risk points with mitigation strategies. The phases are phase-locked: Phase 2 does not commence until Phase 1 exit criteria are met. This prevents the common implementation failure of proceeding with later phases before earlier ones are stable.

Phase 1 — Stabilisation and Foundation (Years 1–3)

The primary objectives of Phase 1 are: eliminating the inherited NHS safety risks; building the governance and digital foundations that all subsequent phases depend on; and delivering visible early improvements that build resident trust in the CHS transition. Phase 1 does not attempt wholesale system change — it stabilises and founds.

Phase 2 — Major Expansion (Years 4–10)

Phase 2 is the construction and workforce expansion phase. It delivers the primary care network, the intermediate care layer, and the first tranche of new Regional Health Centres. It is the highest-capex phase and the period of maximum implementation risk.

Phase 3 — Consolidation and Prevention Dividend (Years 11–20)

Phase 3 delivers the prevention dividend, completes the bed expansion, and transitions the system to steady-state operation. The savings crossover point (Year 11 median scenario) makes this phase financially self-sustaining.

Phase 4 — Mature System and Continuous Improvement (Years 21–30)

Phase 4 operates the CHS as a mature, stable system with continuous improvement cycles. The primary challenges of Phase 4 are: managing the demographic aging pressure at its peak (2040–2050); maintaining the prevention orientation against political and institutional pressure to prioritise acute treatment; and managing technology evolution — particularly AI diagnostic capabilities and genomic medicine — within the CHS framework without recreating commercial capture vulnerabilities.

10.2 Political Risk Points and Mitigation

PART IX — INTEGRATION AND AUTHORIAL STATEMENT

Section 11: Integration with the DD&SA Constitutional Architecture

Section 12: Authorial Statement

This Framework was written to a standard that can be independently assessed by a health economist, a systems engineer, an infrastructure planner, and a governance architect simultaneously. Every number has a source. Every assumption is stated. Every failure mode is modelled. This is necessary because health systems are not aspirational documents — they are the infrastructure on which 70 million lives depend, and they must be designed with the same rigour as any other infrastructure of that consequence.

The architecture rejects two failures simultaneously. The first is the failure of the NHS: a system whose fundamental design was sound in 1948 but which has been degraded by 30 years of market mechanisms, private finance, purchaser-provider transaction costs, and systematic underinvestment in capital and workforce. The NHS is not failing because it was the wrong model — it is failing because it was the right model that was deliberately and incrementally dismantled. The CHS restores and advances that model with the benefit of 70 years of international evidence and 30 years of documented NHS reform failures.

The second failure it rejects is the failure of uncoded aspiration: documents that declare universal health access without specifying the infrastructure, workforce, financial architecture, or governance mechanisms to deliver it. The 30-year financial model in this Framework is not optimistic — it includes a stress test scenario in which the transition costs more than the NHS trajectory. The workforce model quantifies the gap and specifies how it will be filled. The infrastructure model specifies exactly how many facilities of what type will be built, where, and at what cost. The governance model specifies exactly how decisions will be made and by whom.

What this Framework cannot guarantee is that it will be implemented with the fidelity it requires. Every health system reform in the historical record has been modified, diluted, and redirected by the institutional interests it threatens. The CHS's primary defence against this is architectural: the constitutional access guarantee that cannot be removed without NSA supermajority; the CHIB ring-fencing that prevents capital raids; the sortition-based CHA that has no electoral incentive to serve industry rather than residents; the CTEF that prohibits the lobbying that captures elected health ministers. These are not guarantees. They are the strongest structural protections that a constitutional architecture can provide.

"We do not turn back time; we move forward with the wisdom its patterns reveal."

Ian R. Graham BA (Hons)

Sole Architect, Direct Democracy & Sortition Assemblies (DD&SA)

Civic Health Architecture (DD&SA-CHA-001)

Edition 1.0 | April 2026

— END OF DOCUMENT —