

# DIRECT DEMOCRACY & SORTITION ASSEMBLIES

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## CIVIC ENERGY ARCHITECTURE

# THE UK ENERGY SOVEREIGNTY FRAMEWORK

## DDSA-ENERGY-001

*Full UK Oil & Gas Sovereignty · Controlled 50-Year Depletion Schedule*

*All-Electric Transport by 2060 · Near-Zero Gas Usage by 2070*

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### A Complete Multi-Volume Constitutional & Technical Framework

*Six Volumes · Thirty Chapters · Legislative Text · Technical Specifications · Economic Models*

*Based on NSTA verified data: 2.9 Bn boe proven reserves · 6.2 Bn boe contingent resources*

*2024 production baseline: 401 MMboe (1.09 million boed)*

**Ian R. Graham BA (Hons)**

*Mytchett, Surrey Heath, Civic Commonwealth of the British Isles · 2026*

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

*— Ian R. Graham BA (Hons)*

# VOLUME I

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## Constitutional Foundations of DD&SA Energy Sovereignty

*Natural Resource Sovereignty · Governance Architecture · Legislative Instruments*

# Chapter 1 — The State of UK Energy in 2026: A Structural Diagnosis

The United Kingdom enters its second quarter of the twenty-first century in a structurally precarious energy position. A nation sitting atop 9.2 billion barrels of recoverable oil and gas equivalent processes that resource through four refineries — all foreign-owned, three by US corporations — prices its domestic fuel output against an international commodity benchmark, and has allowed the closure of both Scottish refining capacity (Grangemouth, April 2025) and its Lincolnshire strategic reserve (Prax Lindsey, June 2025) without replacement. This is not energy policy. It is the managed surrender of sovereignty.

The DD&SA Energy Sovereignty Framework is the constitutional and technical architecture for reversing that surrender. It does so not by nationalising for its own sake, but by establishing the correct structural relationship between the resources resident under the seabed of the British Isles, the citizens whose geological inheritance they are, and the institutions of the Civic Commonwealth of the British Isles that govern on their behalf.

## 1.1 The Diagnostic Data

Parameter	Current Position (2026)	DD&SA Target
<b>Proven &amp; probable reserves (2P)</b>	2.9 billion boe (NSTA end-2024)	Fully mapped; extraction governed by constitutional corridor
<b>Contingent resources (2C)</b>	6.2 billion boe (discovered, undeveloped)	Development schedule tied to depletion corridor and EV rollout
<b>Prospective resources</b>	4.6 billion boe (31% increase, 33rd Round)	Sortition Assembly decides development within ecological limits
<b>2024 production rate</b>	401 MMboe / year (1.09 million boed)	Corridor: 350-400 MMboe through 2035; declining to <30 MMboe post-2070
<b>Refinery count</b>	4 refineries (all foreign-owned)	5 civic refineries (nationally owned, regionally distributed)
<b>Refinery capacity</b>	~1.0 million b/d combined	~980,000 b/d (right-sized to declining demand curve)
<b>Scotland refinery capacity</b>	Zero (Grangemouth closed April 2025)	New North Scotland Civic Refinery: 80,000 b/d by 2032
<b>Northern Ireland refinery</b>	None	New Northern Ireland Civic Refinery: 40,000 b/d by 2034
<b>Fuel pricing benchmark</b>	Brent-linked international price	Cost-plus domestic benchmark (DDSA-ENERGY-001 Schedule 2)
<b>Sovereign energy fund</b>	None	Civic Resource Fund: accumulates from Day 1 of sovereignty transition
<b>Strategic fuel reserve</b>	Approximately 30 days	90 days minimum; 120 days target by 2035
<b>EV market share (new vehicles)</b>	~30% in 2026	100% of new vehicle sales by 2035; full fleet transition by 2060

**Gas in heating/power**

~40% of heating; ~35% of power generation

Heating: &lt;5% by 2060; power: &lt;5% backup by 2070

## 1.2 Why the Current System Fails Residents

Under the current constitutional arrangement, natural resources beneath British territorial waters and the UK Continental Shelf (UKCS) are held by the Crown, licensed to private extractors at royalty rates set by the Offshore Petroleum Licensing Act 2023 and the Petroleum Act 1998, and subject to Petroleum Revenue Tax and Ring Fence Corporation Tax. The products refined from British crude are sold at international commodity prices. British residents pay the same price for fuel produced from under their own seabed as they would for fuel produced in Saudi Arabia. This is the fundamental incoherence that the DD&SA framework resolves.

*The Sovereignty Inversion: The North Sea contains an estimated 9.2 to 26.5 billion barrels of recoverable oil and gas equivalent. The British residents beneath whose waters this resource sits receive, under current arrangements, a fraction of its value through taxation. They bear full exposure to international price volatility, supply-chain disruption, and refining capacity withdrawal by foreign corporations. The DD&SA Energy Sovereignty Framework corrects this inversion by vesting beneficial ownership of the resource in the residents of the Civic Commonwealth.*

## Chapter 2 — The Natural Resource Sovereignty Act (DDSA-LEG-NRS-001)

*The following represents the full legislative text of the Natural Resource Sovereignty Act as it would be enacted under the DD&SA constitutional order. It is written to the standard of primary UK legislation and is intended to be implementation-ready.*

### NATURAL RESOURCE SOVEREIGNTY ACT

*An Act to vest beneficial ownership of all natural resources within the territory of the Civic Commonwealth of the British Isles in its residents; to establish the Civic Resource Authority; to create the Civic Resource Fund; to regulate extraction and refining; and to connect resource depletion to a constitutionally mandated energy transition schedule.*

### Part I — Vesting of Natural Resource Ownership

**Clause 1. GENERAL VESTING.** *All oil, gas, coal, mineral, geothermal, tidal, and subsoil resources within the territory of the Civic Commonwealth of the British Isles, including the UK Continental Shelf as defined in the Continental Shelf Act 1964, are hereby vested permanently in the residents of the Civic Commonwealth as a collective civic endowment, held in trust by the Civic Resource Authority established under Part II of this Act.*

**Clause 2. NON-ALIENABILITY.** *No natural resource endowment vested under Clause 1 of this Act may be sold, leased in perpetuity, encumbered, or otherwise permanently alienated from the collective beneficial ownership of residents. Extraction licences granted under*

Part IV of this Act confer operational rights only; they do not confer ownership rights of any kind.

**Clause 3. EXTINGUISHMENT OF PRIOR PRIVATE TITLE.** Any private claim to ownership of natural resources within the territory of the Civic Commonwealth which conflicts with the vesting effected by Clause 1 is hereby extinguished, without compensation for the ownership claim itself, subject to fair compensation for proven and quantified capital expenditure sunk in good faith under prior lawful licences, calculated on a net present value basis and payable from the Civic Resource Fund.

**Clause 4. SEABED SOVEREIGNTY REAFFIRMATION.** The seabed and subsoil of the UK Continental Shelf are confirmed as territory of the Civic Commonwealth for the purposes of this Act and all subordinate instruments. No foreign state or international organisation may hold extractive licences on the UKCS; all UKCS extraction shall be conducted by the Civic Resource Authority or by civic extraction companies in which the Civic Resource Authority holds a controlling interest of not less than 51%.

## Part II – The Civic Resource Authority

**Clause 5. ESTABLISHMENT.** There is hereby established a body corporate to be known as the Civic Resource Authority (in this Act referred to as "the CRA"), which shall be the sole licensing and regulatory body for all natural resource extraction within the Civic Commonwealth.

**Clause 6. GOVERNANCE.** The CRA shall be governed by a Board of nine members: (a) three members appointed by the Annual Sortition Energy Assembly established under Part III of this Act; (b) three members selected by nationwide sortition from residents with demonstrated technical expertise in petroleum geology, energy engineering, or energy economics; (c) one member representing the National Health Assembly; (d) one member representing the Environmental Integrity Commission; (e) one member who is a permanently employed worker in the energy extraction or refining sector, selected by ballot of all such workers. No Board member may hold any financial interest in any private energy company during their term.

**Clause 7. TERM.** Board members serve terms of three years, staggered to ensure continuity. No individual may serve more than two terms. Members may be recalled by a 75% vote of the Annual Sortition Energy Assembly.

**Clause 8. POWERS.** The CRA shall have power to: (a) grant, vary, suspend, and revoke extraction licences under Part IV; (b) set extraction quotas consistent with the Constitutional Depletion Corridor established under Part V; (c) own and operate civic extraction companies and civic refineries; (d) establish and administer the Civic Resource Fund under Part VI; (e) set domestic fuel pricing benchmarks under Schedule 2; (f) publish quarterly production, revenue, and reserve reports; (g) commission independent geological surveys and reserve assessments.

**Clause 9. PROHIBITION ON CAPTURE.** No Board member, CRA employee, or their immediate family members may accept any employment, directorship, consultancy, or financial benefit from any private energy company for a period of five years following the end of their CRA service. Breach of this clause constitutes a civic offence under the Anti-Corruption and Capture Prevention Framework (DDSA-GOV-ACC-001).

## Part III – The Annual Sortition Energy Assembly

**Clause 10. ESTABLISHMENT.** There is hereby established the Annual Sortition Energy Assembly (ASEA), which shall meet in plenary session not less than once per calendar year to exercise the sovereign energy oversight functions specified in this Act.

**Clause 11. COMPOSITION.** *The ASEA shall comprise 300 residents of the Civic Commonwealth, selected by random stratified sortition to be statistically representative of the resident population by age, region, gender, and occupation. Technical advisory panels of not more than 30 persons each, selected by technical merit from applicant residents, shall support the ASEA in deliberations but shall hold no vote.*

**Clause 12. MANDATORY ANNUAL FUNCTIONS.** *The ASEA shall, at its annual plenary session: (a) review and approve or vary the Annual Extraction Quota for the following calendar year, within the bounds of the Constitutional Depletion Corridor; (b) review the Civic Resource Fund annual accounts; (c) set the Domestic Fuel Price Benchmark for the following year; (d) review progress against the Energy Transition Schedule; (e) receive and consider independent geological assessments of remaining reserves; (f) publish its decisions and deliberation records in full, in plain language, within 30 days of the session.*

**Clause 13. EXTRAORDINARY SESSION.** *The ASEA may convene an extraordinary session if: (a) a two-thirds majority of the CRA Board so requests; (b) a verified petition signed by not fewer than 100,000 residents is submitted; or (c) the Constitutional Court of the Civic Commonwealth makes a referral. Extraordinary sessions may consider any matter within the ASEA's jurisdiction.*

**Clause 14. SUPER-MAJORITY FOR CORRIDOR MODIFICATION.** *Any modification to the Constitutional Depletion Corridor established under Part V of this Act shall require: (a) a three-quarters majority vote of the ASEA; (b) ratification by the National Sortition Assembly; (c) not less than six months of public deliberation before the vote; and (d) independent scientific review confirming that the modification is consistent with the Civic Commonwealth's constitutional ecological obligations. Modifications may only narrow the corridor or reduce extraction volumes; they may not increase extraction beyond the upper bound of the corridor.*

## Part IV — Extraction Licensing

**Clause 15. SOLE LICENSING AUTHORITY.** *No natural resource may be extracted from within the territory of the Civic Commonwealth except under a licence granted by the CRA pursuant to this Part. The grant of a licence confers no ownership in the resource; it confers only the right to extract a specified quantity of the resource in a specified manner within a specified period, subject to all conditions of this Act.*

**Clause 16. CIVIC PREFERENCE.** *In any licensing round, preference shall be given in the following order: (a) wholly-owned civic extraction companies; (b) companies in which the CRA holds not less than 51% of issued share capital; (c) companies in which the CRA holds not less than 26% of issued share capital and in which civic pension funds hold not less than a further 25%; (d) all other companies, subject to the conditions of Clause 17.*

**Clause 17. CONDITIONS FOR ALL LICENCES.** *Every licence granted under this Part shall specify: (a) the annual extraction quota for that licence, consistent with the CRA's aggregate quota under the Constitutional Depletion Corridor; (b) the percentage of production that must be delivered to domestic refineries before export; (c) the domestic content requirement for all goods and services procured in connection with the licensed operations; (d) the decommissioning security deposit, calculated on a full site-restoration basis; (e) the environmental monitoring obligations; (f) the community benefit payment schedule; (g) the worker safety and employment terms.*

**Clause 18. DOMESTIC SUPPLY OBLIGATION.** *Every licensee shall deliver not less than 60% of production from any licensed field to a domestic civic refinery before any export. This percentage shall be increased to 75% once the five-refinery civic network is fully operational, and to 85% from 2040 onwards, reflecting the declining volume of remaining reserves and the priority of domestic energy security.*

**Clause 19. ANTI-SPECULATION PROHIBITION.** A licence confers no right to sell, assign, sub-licence, trade, or use as financial collateral the extraction rights or the production volumes anticipated thereunder without the prior written consent of the CRA, which may be withheld at the CRA's absolute discretion. Any purported assignment in breach of this clause is void.

## Part V – The Constitutional Depletion Corridor

**Clause 20. DEPLETION CORRIDOR ESTABLISHMENT.** The following Constitutional Depletion Corridor is hereby established as the binding legal framework governing the rate of extraction of oil and gas from all fields within the territory of the Civic Commonwealth. All annual quotas set by the CRA and the ASEA shall fall within this corridor.

CONSTITUTIONAL DEPLETION CORRIDOR – DDSA-LEG-NRS-001, Schedule 1

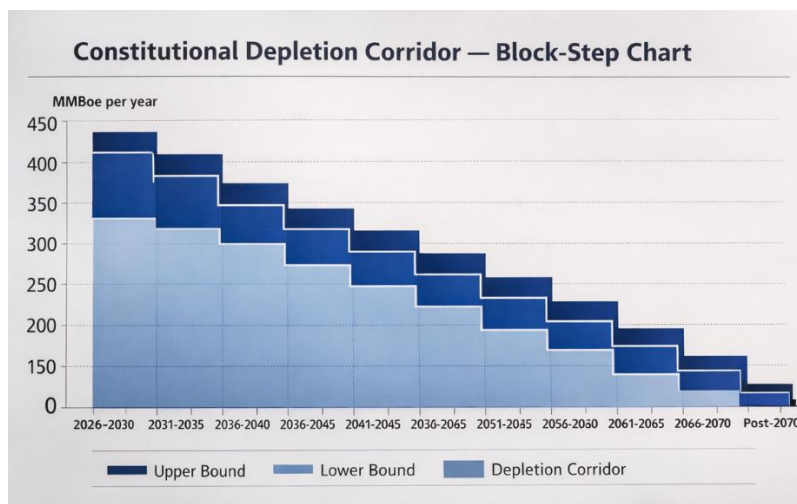
Period	Lower Bound	Upper Bound	Status
2026-2030	350 MMboe/yr	410 MMboe/yr	Maintenance phase
2031-2035	320 MMboe/yr	380 MMboe/yr	Transition phase 1
2036-2040	240 MMboe/yr	300 MMboe/yr	Transition phase 2
2041-2045	180 MMboe/yr	240 MMboe/yr	EV dominance phase
2046-2050	120 MMboe/yr	180 MMboe/yr	Deep transition phase
2051-2055	80 MMboe/yr	130 MMboe/yr	Near-zero transport phase
2056-2060	50 MMboe/yr	100 MMboe/yr	Transport electrification complete
2061-2065	30 MMboe/yr	75 MMboe/yr	Gas obsolescence phase
2066-2070	15 MMboe/yr	50 MMboe/yr	Gas obsolescence complete
Post-2070	0 MMboe/yr	25 MMboe/yr	Feedstock only

MMboe = million barrels of oil equivalent per year

CUMULATIVE EXTRACTION UNDER CORRIDOR (Central Estimate):

2026-2035: ~3.8 billion boe  
 2036-2050: ~3.5 billion boe  
 2051-2070: ~2.0 billion boe  
 Post-2070: ~0.3 billion boe (feedstock)  
 TOTAL: ~9.6 billion boe

This is consistent with NSTA end-2024 total recoverable estimate of 9.2 billion boe (2P+2C), with a modest allowance for prospective resource development within sortition-approved limits.



**Clause 21. CORRIDOR BINDING FORCE.** No annual extraction quota set by the CRA shall exceed the upper bound of the Constitutional Depletion Corridor for the relevant period. Any quota that would exceed the upper bound is void ab initio. The CRA shall report to the Constitutional Court of the Civic Commonwealth if any licensee's actual production exceeds the annual quota.

**Clause 22. LINKAGE TO TRANSITION MILESTONES.** The Constitutional Depletion Corridor is explicitly linked to the Energy Transition Schedule in Schedule 3. If an Energy Transition Milestone in Schedule 3 is achieved ahead of schedule, the CRA may, with ASEA approval, reduce the upper bound of the Corridor proportionally. It may not increase the upper bound.

**Clause 23. POST-2070 FEEDSTOCK CARVE-OUT.** Post-2070 production under this Act is limited to the provision of hydrocarbon feedstocks for petrochemical, pharmaceutical, materials, and essential industrial purposes for which no technically and economically feasible non-hydrocarbon substitute exists. The ASEA shall publish an annually updated list of qualifying feedstock applications. Aviation fuel from sustainable aviation fuel (SAF) sources shall not be classified as a qualifying feedstock application after 2075.

## Part VI – The Civic Resource Fund

**Clause 24. ESTABLISHMENT.** There is hereby established the Civic Resource Fund (CRF), which shall be the sovereign accumulation vehicle for revenues generated from the extraction and refining of natural resources under this Act. The CRF is a permanent fund held in trust for the residents of the Civic Commonwealth and their successors.

**Clause 25. REVENUE STREAMS.** The following shall be paid into the CRF: (a) all licence fees and rental payments under Part IV; (b) all extraction royalties, calculated at not less than 20% of the net revenue value of production at the point of extraction; (c) all dividends and surplus revenues from civic extraction companies and civic refineries; (d) all proceeds of the Domestic Pricing Premium (the difference between international price and the domestic cost-plus benchmark, collected as a Civic Resource Levy); (e) all penalties and forfeiture payments under this Act.

**Clause 26. FUND GOVERNANCE.** The CRF shall be governed by a Fund Council of seven members: (a) two appointed by the ASEA; (b) two selected by nationwide sortition; (c) one representative of the National Health Assembly; (d) one representative of civic pension funds; (e) one independent auditor appointed by the Constitutional Court. The CRF shall not be subject to direction by any national government department or minister. Its accounts shall be audited annually by a sortition-selected panel of three qualified accountants.

**Clause 27. ALLOCATION OF CRF REVENUES.** Annual CRF revenues shall be allocated as follows: (a) 40% to the National Grid Transition Fund, to finance grid reinforcement, storage build-out, and renewable energy development; (b) 25% to the Civic Dividend, distributed equally to every resident of the Civic Commonwealth on an annual per-capita basis; (c) 20% to the Strategic Reserve Maintenance Fund; (d) 10% to the Industrial Transition Fund, supporting industries transitioning away from fossil-fuel dependence; (e) 5% to the Geological Research and Survey Fund.

**Clause 28. PERMANENT FLOOR.** The principal of the CRF shall never fall below 10% of the total value of remaining proved and probable reserves, as assessed annually by the CRA. If the fund falls below this floor, the Civic Dividend shall be suspended until the floor is restored.

## Part VII — Anti-Capture & Anti-Lobbying Provisions

**Clause 29. LOBBYING BAN.** *No person shall, directly or indirectly, make representations to any member of the ASEA, any member of the CRA Board, any CRF Fund Council member, or any CRA employee concerning any matter pending before those bodies, except in the context of formal public consultation processes conducted under this Act. Representations made through any channel other than formal public consultation are void and may not be considered.*

**Clause 30. REVOLVING DOOR PROHIBITION.** *As specified in Clause 9 of this Act and supplemented herein: (a) no employee of any private energy company may be appointed to the CRA Board or ASEA technical panel for a period of five years following the end of their private employment; (b) no CRA Board member or ASEA technical panel member may accept employment with any private energy company for five years after their service; (c) these restrictions apply to any company in which the individual holds more than 0.1% of issued share capital.*

**Clause 31. TRANSPARENCY OBLIGATIONS.** *The CRA shall publish: (a) all licence applications and decisions within 14 days; (b) all Board minutes within 30 days; (c) all production and revenue data on a monthly basis; (d) all geological assessments within 30 days of receipt; (e) all correspondence with licensees that relates to quota compliance. No information held by the CRA or CRF shall be classified as commercially confidential where it relates to the use of public natural resources.*

**Clause 32. CIVIC WATCHDOG.** *There is hereby established the Civic Energy Watchdog (CEW), independent of both the CRA and the national government, constituted by a five-member panel selected by public sortition. The CEW shall: (a) receive and investigate complaints from any resident concerning the conduct of the CRA, the CRF, or any licensee; (b) have full access to all CRA and CRF records; (c) publish an annual report; (d) refer suspected offences to the Civic Justice Authority.*

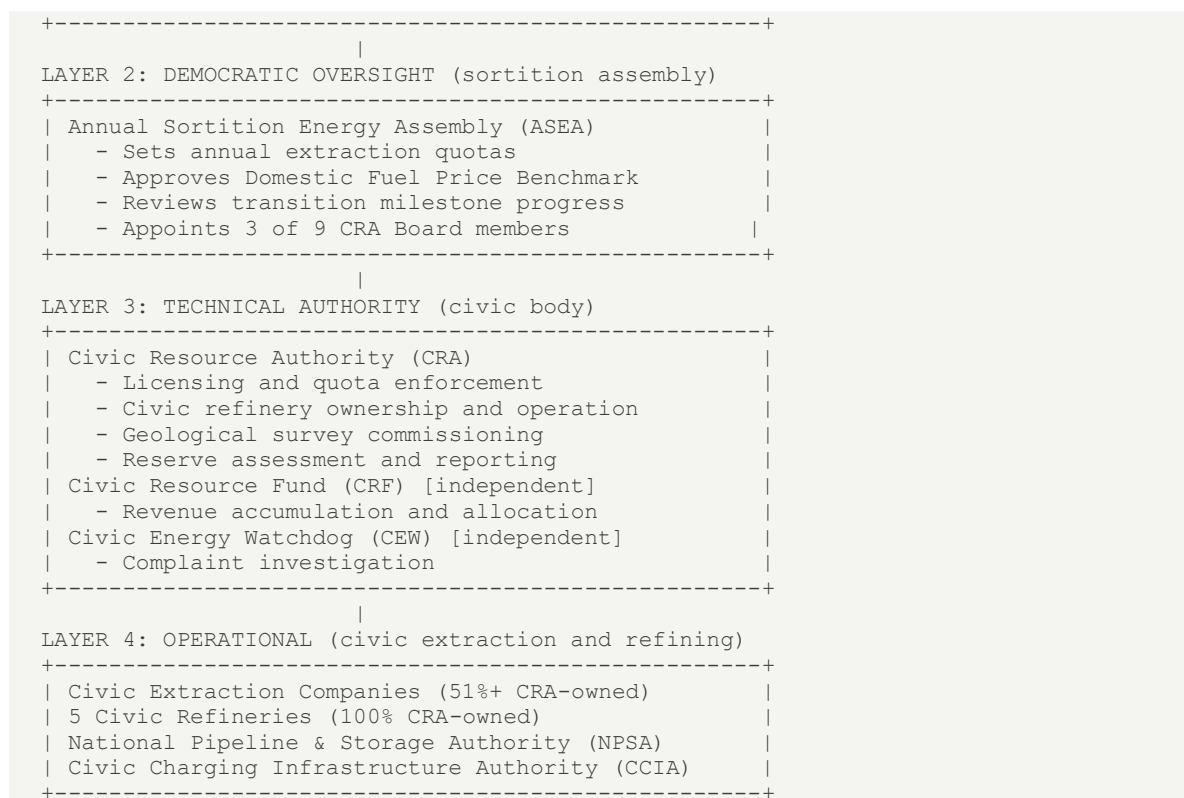
## Chapter 3 — DD&SA Governance Architecture for Energy

The DD&SA Energy Sovereignty Framework operates through a layered governance architecture in which authority flows from the constitutionally entrenched depletion corridor (immovable by any simple majority) through the Annual Sortition Energy Assembly (the sovereign democratic body) through the Civic Resource Authority (the technical and operational body) to individual civic extraction companies and refineries (the operational layer). This architecture deliberately separates constitutional constraint, democratic oversight, technical management, and commercial operation.

### 3.1 The Governance Stack

#### DD&SA ENERGY GOVERNANCE ARCHITECTURE

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LAYER 1: CONSTITUTIONAL (immovable by simple majority)
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| Constitutional Depletion Corridor (Part V, NRS Act) |
| Civic Resource Fund (Part VI, NRS Act) |
| Anti-Capture Provisions (Part VII, NRS Act) |
| Resident Ownership Principle (Part I, NRS Act) |
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## 3.2 Interaction with DD&SA Sortition Architecture

The ASEA is a specialist sortition body within the broader DD&SA sortition architecture. It has a specific mandate (energy policy) and a specific annual function. Its decisions on extraction quotas and fuel pricing are binding on the CRA and have constitutional force by virtue of their operation within the Depletion Corridor. The ASEA does not set energy policy for the grid, for renewables, or for the heating transition — those fall within the remit of the National Sortition Assembly and relevant civic frameworks — but its authority over hydrocarbon extraction and pricing is absolute within the corridor.

The relationship between the ASEA and the National Sortition Assembly is one of specialisation, not subordination. The NSA cannot override ASEA decisions on extraction quotas; the ASEA cannot override NSA decisions on grid investment or renewable policy. Both bodies are subject to the constitutional constraints of the NRS Act and the broader DD&SA constitutional order.

## 3.3 The Domestic Fuel Price Benchmark (DFPB)

The Domestic Fuel Price Benchmark is the price at which all civically produced and refined fuel shall be sold to domestic consumers. It is calculated annually by the ASEA on a cost-plus basis and is the definitive departure from the Brent-linked pricing that currently exposes British residents to international commodity speculation.

### DOMESTIC FUEL PRICE BENCHMARK — CALCULATION METHODOLOGY

$$\text{DFPB} = (\text{C}_{\text{extract}} + \text{C}_{\text{transport}} + \text{C}_{\text{refine}} + \text{C}_{\text{distribute}}) \times (1 + M)$$

Where:

$\text{C}_{\text{extract}}$  = Verified cost of extraction (per barrel)  
2024 baseline: £19.49/boe (NSTA data)

C\_transport = Pipeline and tanker transport cost  
 Estimate: £2.50-4.00/boe (varies by field-refinery distance)  
 C\_refine = Refinery processing cost  
 Estimate: £5.50-8.00/boe (civic refinery target)  
 C\_distribute = Distribution to retail/industrial customer  
 Estimate: £2.00-3.00/boe  
 M = Civic margin (retained in CRF for Transition Fund)  
 Set by ASEA annually; not to exceed 15%

ILLUSTRATIVE DFPB CALCULATION (2026, per barrel equivalent):

C_extract:	£19.49
C_transport:	£ 3.20
C_refine:	£ 6.50
C_distribute:	£ 2.50
Subtotal:	£31.69
M (12%):	£ 3.80
DFPB:	£35.49 / barrel equivalent

At Brent crude ~\$80/bbl (approx. £63/bbl), the DFPB represents a 44% reduction from international price for domestic consumers. The difference (Civic Resource Levy) accrues to the CRF.

*The Domestic Fuel Price Benchmark is not a subsidy. It is the correct price: the price that reflects actual costs of production, transport, refining, and distribution, plus a civic margin that flows back to residents through the Civic Dividend and the National Grid Transition Fund. The international Brent price contains speculation, geopolitical risk premium, and corporate profit margin that has no relationship to the cost of producing a barrel of British oil from a British field to a British refinery.*

# Chapter 4 – Anti-Corruption & Capture Prevention Architecture

The history of oil and gas governance across all nations demonstrates a single consistent failure mode: regulatory capture by the industry being regulated. The DD&SA framework addresses this as a first-order constitutional design problem, not an afterthought. The anti-capture architecture is embedded at every layer of the governance stack and is structurally non-optional.

## 4.1 Structural Anti-Capture Mechanisms

Mechanism	Design Logic & Implementation
<b>Sortition-based governance at all levels</b>	Randomly selected citizens have no pre-existing relationship with the energy industry and cannot be targeted by lobbying networks. All board appointments that are not sortition-based are subject to a 5-year cooling-off period.
<b>Complete financial transparency</b>	All CRA decisions, licences, revenues, and expenditures are publicly accessible within 30 days. No commercial confidentiality applies to the use of public natural resources.
<b>Mandatory declaration regime</b>	All CRA Board members, ASEA technical panel members, and CRF Fund Council members must declare all financial interests above £500. Declarations are public and updated monthly.
<b>Revolving door prohibitions (5-year)</b>	No private energy sector employee may sit on the CRA Board or ASEA panel for 5 years after employment. No CRA or ASEA official may work for a private energy company for 5 years after service.
<b>Lobbying channel restriction</b>	Industry may only make representations through formal public consultation processes. Direct representations to decision-makers are criminalised under the Anti-Corruption Framework.
<b>Independent Civic Energy Watchdog</b>	A sortition-selected, fully independent body with full access to all CRA records and a mandate to investigate any complaint from any resident.
<b>Constitutional Court supervision</b>	The Constitutional Court of the Civic Commonwealth has jurisdiction to review any CRA, ASEA, or CRF decision for compliance with the NRS Act. Any resident may bring a challenge.
<b>Worker representation on CRA Board</b>	One permanently employed energy-sector worker on the CRA Board, selected by ballot of all energy workers, prevents the board from acting against worker interests and provides inside-knowledge accountability.

# VOLUME II

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## Energy System Architecture

*National Refinery Network · Pipeline & Storage · Pricing · Sovereign Fund*

# Chapter 5 — The National Refinery Crisis: A Technical Assessment

The United Kingdom's refining sector has undergone its most severe contraction since the Second World War. From eighteen refineries in the 1970s, the UK now operates four — all foreign-owned, none in Scotland, none in Northern Ireland — with a combined capacity of approximately 1.0 million barrels per day. The closure of Grangemouth (April 2025) leaves Scotland — which produces the majority of UK crude from North Sea fields — entirely dependent on imported products. This is not commercially optimal; it is strategically absurd. Scotland extracts the oil and must import the products refined from it from England or continental Europe.

## 5.1 Current Refinery Inventory (2026)

Refinery	Location	Operator (2026)	Capacity (b/d)	Status / Notes
Fawley	Hampshire, South England	ExxonMobil (US)	270,000	Operational; largest UK refinery; 20% UK capacity; feeds London/SE; kerosene/jet-fuel critical
Humber	North Lincolnshire, NE England	Phillips 66 (US)	221,000	Operational; produces speciality anode coke for EV batteries; critical industrial asset
Pembroke	Pembrokeshire, SW Wales	Valero (US)	270,000	Operational; supplies Wales, SW England, airports
Stanlow	Cheshire, NW England	Essar (India)	190,000	Operational; Northwest England supply; financial pressures noted
Grangemouth	Firth of Forth, Scotland	Petroineos (China/UK)	0	CLOSED April 2025. Converting to import terminal. Scotland loses all domestic refining.
Prax Lindsey	North Lincolnshire	Prax Group	0	CLOSED June 2025. Insolvency. 110,000 b/d lost; jobs and strategic capacity lost.

**Strategic Vulnerability Assessment:** The closure of Grangemouth means that Scotland, which produces approximately 80% of UK crude oil from North Sea fields, has zero domestic refining capacity. All Scottish fuel is now either imported from England or from continental Europe. The UK now has only one refinery south of Cheshire (Fawley), serving the entire south of England including London. One deliberate attack, major failure, or supply chain disruption at Fawley would immediately deprive London and the South East of all domestically refined fuel. This is an unacceptable national security risk.

## 5.2 The Five-Refinery Civic Network

The DD&SA five-refinery civic network is designed to: (i) restore Scottish refining capacity; (ii) establish Northern Ireland refining capacity for the first time; (iii) maintain south coast capacity; (iv) maintain Wales and the South West; and (v) maintain East Coast/Northern England capacity. The

network is sized to the declining demand curve set by the Depletion Corridor, avoiding the error of building full-capacity infrastructure for a declining industry.



## 5.3 Refinery Acquisition Strategy

Four of the five civic refineries are acquisitions of existing facilities. The DD&SA framework prioritises acquisition over new-build for operational refineries because: (i) the physical assets — distillation columns, catalytic crackers, storage infrastructure, pipeline connections — represent decades of capital investment; (ii) skilled workforces are already in place; (iii) the lead time for operational capability is years, not decades; and (iv) the declining demand curve means new-build greenfield refineries would be uneconomic.

Refinery	Acquisition Mechanism	Timeline	Estimated Acquisition Cost
<b>Pembroke (Valero)</b>	Compulsory civic acquisition under NRS Act Clause 3. Fair compensation for capital expenditure paid from CRF. Valero operates under licence until transition complete.	2027	Est. £1.8-2.4 billion (capital sunk)

Refinery	Acquisition Mechanism	Timeline	Estimated Acquisition Cost
<b>Fawley (ExxonMobil)</b>	Compulsory civic acquisition. ExxonMobil retains petrochemical operations as separate licensed entity; refinery operations transfer to CRA.	2027	Est. £2.2-3.0 billion
<b>Humber (Phillips 66)</b>	Compulsory civic acquisition. Phillips 66 offered a 20-year technical services contract at market rate during transition.	2028	Est. £1.4-1.9 billion
<b>Grangemouth (Petroineos)</b>	Site already converting to import terminal. CRA acquires site for full civic refinery development. New-build on existing Grangemouth infrastructure.	2029	Est. £800m-1.2 billion (new build on site)
<b>North Scotland (new build)</b>	Greenfield site at Nigg Bay or Inverness. Leverages North Sea proximity. Modular construction preferred.	2032	Est. £1.0-1.5 billion
<b>Northern Ireland (new build)</b>	Greenfield at Belfast Lough or Larne. Serves NI domestic market. Smaller modular design.	2034	Est. £600-900 million

*Total Civic Refinery Acquisition & Build Cost: Estimated £7.8-11.0 billion over 2027-2034. This is funded from the CRF from Year 1 of operation. At 401 MMboe/year production with a £15 Civic Resource Levy per boe, the CRF accumulates approximately £6 billion per year from Year 1 — meaning the entire refinery network acquisition cost is recoverable within 2 years of full CRF operation.*

## 5.4 Modular Refinery Technology Specification

The new-build refineries (Grangemouth redevelopment, North Scotland, Northern Ireland) shall be constructed on a modular unit basis, using standardised process units that can be: (i) rapidly commissioned in sequence; (ii) individually retired as demand falls without shutting the entire facility; (iii) repurposed for green hydrogen production, sustainable aviation fuel, or renewable chemical feedstocks as the product mix transitions.

Processing Unit	Specification & Civic Design Rationale
<b>Atmospheric Distillation Unit (ADU)</b>	Each civic refinery shall have one ADU sized to nameplate capacity. Modular design allows individual train retirement as crude intake falls. Target operating cost: £4.50/barrel.
<b>Vacuum Distillation Unit (VDU)</b>	Required for processing heavy ends and producing lubricant base stocks. One per refinery; sized to 40% of ADU throughput.
<b>Fluid Catalytic Cracking (FCC)</b>	Converts heavy gas oil to transport fuels. Modular: each civic refinery operates one FCC unit, with a second train on hot standby until demand falls sufficiently to permit retirement.
<b>Hydrotreater units</b>	Essential for producing low-sulphur products meeting civic environmental standards. Two per refinery (distillate and naphtha streams). These units are retained longest in the depletion schedule as they process feedstocks for non-fuel products.

Processing Unit	Specification & Civic Design Rationale
<b>Reformer unit</b>	Produces high-octane blending components and hydrogen for hydrotreaters. One per refinery; can be repurposed for green hydrogen blending as renewable electricity becomes available.
<b>Hydrogen production unit</b>	Each refinery shall include a green hydrogen production unit (electrolysis) fed from the National Grid. This enables a smooth transition from fossil hydrogen to green hydrogen for hydrotreating as the refinery product mix shifts toward chemical feedstocks post-2050.
<b>SAF (Sustainable Aviation Fuel) conversion</b>	From 2035, each civic refinery shall be fitted with a SAF conversion unit capable of processing bio-feedstocks (waste oils, agricultural residues) into jet-fuel-specification SAF, ensuring aviation fuel security as crude supply declines.

## Chapter 6 – Pipeline, Storage & Supply Architecture

### 6.1 National Pipeline Authority

There is hereby established the National Pipeline & Storage Authority (NPSA) as a wholly civic body responsible for owning, operating, and maintaining all strategic pipeline and storage infrastructure in the Civic Commonwealth. The NPSA absorbs the existing pipeline infrastructure including the Forties Pipeline System (currently operated by Repsol Sinopec) and the Central Area Transmission System (CATS), both of which shall be acquired by the NPSA under the NRS Act.

Infrastructure Asset	Acquisition/Development Plan
<b>Forties Pipeline System (FPS)</b>	Acquire from Repsol Sinopec. Critical North Sea to Kinneil/Grangemouth crude delivery. 200+ km offshore; 56 fields connected. Essential for East Coast Civic Refinery supply. Estimated cost: £400-600m.
<b>CATS (Central Area Transmission System)</b>	Gas pipeline from Everest and Lomond fields. Acquire as part of gas transition; maintain through corridor period; retire per Schedule 3 gas phase-out timeline.
<b>Fawley pipeline network</b>	700km network supplying London, Heathrow, Gatwick. Retain and operate under NPSA. Critical during transport transition period.
<b>UKOP (UK Oil Pipelines)</b>	Multi-product pipeline (Fawley to Thames Estuary and Midlands). Acquire and operate under NPSA.
<b>Esmond-Forbes-Gordon Interconnector</b>	North Sea gas interconnector to Belgium. Retain through gas transition period; repurpose for hydrogen export post-2055 if viable.
<b>New Scotland Distribution Network</b>	New pipeline from East Coast Civic Refinery (Grangemouth) to Inverness/North Scotland terminals and to new North Scotland Civic Refinery. Investment: £180-250m.
<b>Northern Ireland Cross-Channel Supply</b>	Existing ferry-based supply to be supplemented by new NI Civic Refinery. Coastal pipeline from Belfast to Derry considered post-2034.

### 6.2 Strategic Fuel Reserve Architecture

The UK's current strategic fuel reserve of approximately 30 days is inadequate for a nation that has recently closed 40% of its domestic refining capacity. The DD&SA framework mandates a 90-day strategic reserve within five years of the NRS Act's enactment and a 120-day reserve by 2035.

Reserve Category	Volume (Days of Consumption)	Storage Location	Timeline
<b>Current UK reserve</b>	~30 days	Dispersed commercial storage	Baseline 2026
<b>Immediate priority (crude)</b>	60 days crude oil in strategic sites	Nigg Bay caverns (Scotland); Milford Haven; Humber estuary	By 2030
<b>Refined products reserve</b>	30 days key products (diesel, petrol, jet)	All five civic refinery sites; regional distribution hubs	By 2030
<b>Full strategic reserve target</b>	90 days combined crude + products	Five civic refinery sites + 12 regional depots	By 2032
<b>Enhanced strategic reserve</b>	120 days (post full civic network)	As above + geological storage (salt caverns)	By 2035
<b>Post-transition reserve (2050+)</b>	60 days (lower demand)	Reduced to 3 strategic sites as consumption falls	By 2050

*The 120-Day Reserve Rationale: NATO recommends 90 days of strategic petroleum reserve for member states. Given the UK's recent experience of supply-chain fragility (kerosene stockpiles fell to approximately 30 days in 2026 due to Middle East disruption), the DD&SA target of 120 days is the correct resilience specification for a Civic Commonwealth that is constitutionally committed to resident energy security. At 2030 consumption rates, 120 days of reserve represents approximately 120 million barrels equivalent — achievable within the CRF budget.*

## Chapter 7 — The Sovereign Energy Fund: Structure & Projections

### 7.1 Civic Resource Fund — Revenue Model

The CRF revenue model is constructed from four primary streams: extraction royalties, the Civic Resource Levy (the domestic pricing premium), civic refinery surpluses, and licence fees. The following projections are based on the Depletion Corridor central estimates and a conservative Brent oil price assumption of \$75-85/barrel through the 2030s.

Revenue Stream	2028 (Est.)	2035 (Est.)	2045 (Est.)	2055 (Est.)
<b>Extraction royalties (20% of production value)</b>	£3.0 bn/yr	£2.2 bn/yr	£1.4 bn/yr	£0.6 bn/yr
<b>Civic Resource Levy (DFPB vs Brent gap)</b>	£4.8 bn/yr	£3.5 bn/yr	£1.8 bn/yr	£0.4 bn/yr
<b>Civic refinery operating surplus</b>	£1.2 bn/yr	£1.6 bn/yr	£1.0 bn/yr	£0.3 bn/yr

Revenue Stream	2028 (Est.)	2035 (Est.)	2045 (Est.)	2055 (Est.)
Licence fees and penalties	£0.3 bn/yr	£0.2 bn/yr	£0.1 bn/yr	£0.05 bn/yr
<b>TOTAL CRF ANNUAL REVENUE</b>	<b>£9.3 bn/yr</b>	<b>£7.5 bn/yr</b>	<b>£4.3 bn/yr</b>	<b>£1.35 bn/yr</b>
Civic Dividend per resident (25% allocation, ~50m residents)	£465/person	£375/person	£215/person	£68/person
Grid Transition Fund (40% allocation)	£3.72 bn/yr	£3.0 bn/yr	£1.72 bn/yr	£0.54 bn/yr

## 7.2 Cumulative CRF Accumulation Curve

### CIVIC RESOURCE FUND – CUMULATIVE BALANCE PROJECTION (CENTRAL CASE)

Year	Annual Revenue	Annual Outflows	CRF Balance (Cumulative)
2027	£4.2 bn	£3.5 bn (acq.)	£0.7 bn (start-up)
2028	£9.3 bn	£5.5 bn (acq.)	£4.5 bn
2029	£9.3 bn	£4.0 bn	£9.8 bn
2030	£9.0 bn	£3.5 bn	£15.3 bn
2032	£8.5 bn	£3.0 bn	£28.1 bn
2035	£7.5 bn	£2.8 bn	£47.0 bn
2040	£6.0 bn	£2.5 bn	£69.5 bn
2045	£4.3 bn	£2.2 bn	£81.0 bn
2050	£2.8 bn	£1.8 bn	£86.0 bn
2055	£1.4 bn	£1.2 bn	£89.0 bn
2060	£0.8 bn	£0.8 bn	£89.0 bn
2070	£0.2 bn	£0.3 bn	£87.0 bn

#### Notes:

- Outflows include: Civic Dividend (25%), Grid Transition (40%), Strategic Reserve (20%), Industrial Transition (10%), Geological (5%)
- CRF balance does not include return on invested assets (invested in UK infrastructure at 4-5% nominal return)
- A fully invested CRF at £87bn by 2070 generates ~£4.0bn/year income permanently, providing a perpetual civic endowment post-depletion

CONCLUSION: The CRF, properly managed, converts a depleting geological asset into a permanent civic endowment – the Norwegian model applied with DD&SA democratic accountability.

# VOLUME III

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## Depletion & Transition Master Schedule

*Year-by-Year Production Caps · EV Milestones · Grid Reinforcement · Gas Phase-Out*

# Chapter 8 – Depletion Schedule: Geological Foundation

The Constitutional Depletion Corridor is grounded in NSTA-verified geological data. At end-2024, the UK Continental Shelf holds 2.9 billion barrels of proven and probable (2P) reserves, 6.2 billion barrels of contingent (2C) resources, and 4.6 billion barrels of prospective resources. The total recoverable resource estimate ranges from 9.2 billion boe (2P+2C only) to a high-case 26.5 billion boe including all prospective resources. The DD&SA depletion model uses a planning case of 12.0 billion boe (2P+2C plus 30% of prospective), representing a technically conservative but not extreme view of recoverable resources.

## 8.1 Reserve Categories & DD&SA Planning Case

Reserve Category	NSTA End-2024 Estimate	DD&SA Planning Case	Rationale
<b>2P (Proven + Probable)</b>	2.9 billion boe	2.9 billion boe	Use NSTA central estimate directly
<b>2C (Contingent resources)</b>	6.2 billion boe	5.0 billion boe	Apply 80% development probability; some 2C may prove uneconomic at declining production rates
<b>Prospective resources</b>	4.6 billion boe (31% increase)	1.5 billion boe	Apply 33% geological success rate; sortition approval required for each development
<b>Unrisked prospective high</b>	~15.8 billion boe (with all 33rd Round)	0 boe	Not included in planning case; represents upside only
<b>DD&amp;SA PLANNING CASE TOTAL</b>	n/a	9.4 billion boe	Conservative but realistic; supports depletion corridor through 2070
<b>Post-depletion feedstock reserve</b>	n/a	0.3 billion boe	Reserved for post-2070 industrial/feedstock use

## 8.2 The Ten-Phase Depletion Schedule

The following schedule sets annual production corridors, the primary policy driver for each phase, the EV adoption milestone for each phase, the gas-phase-out milestone for each phase, and the estimated remaining reserve at phase end.

DD&SA MASTER DEPLETION SCHEDULE – DDSA-ENERGY-001, Schedule 3

PHASE 1: SOVEREIGNTY TRANSITION (2026-2030)

Production corridor: 350-410 MMboe/year

Primary driver: Civic acquisition of refineries; CRF establishment; domestic supply obligation enforcement

EV milestone: EV share of new vehicle sales reaches 50% by 2030

Gas milestone: No gas-fired power stations receive new contracts from 2028 onwards (existing contracts honoured)

Reserve consumed: ~1.9 billion boe (central: 381 MMboe/yr x 5)  
 Reserve remaining: ~7.5 billion boe (vs 9.4 billion planning case)

#### PHASE 2: MANAGED TRANSITION I (2031-2035)

Production corridor: 320-380 MMboe/year  
 Primary driver: Civic refinery network fully operational;  
 EV adoption accelerating; DFPB fully implemented  
 EV milestone: 100% of new vehicle sales are EV by 2035  
 Gas milestone: Gas boiler ban in new residential builds from 2031  
 Reserve consumed: ~1.75 billion boe  
 Reserve remaining: ~5.75 billion boe

#### PHASE 3: MANAGED TRANSITION II (2036-2040)

Production corridor: 240-300 MMboe/year  
 Primary driver: EV fleet dominance in passenger vehicles;  
 freight electrification begins;  
 gas heating phase-out in residential sector  
 EV milestone: 60% of total vehicle fleet is EV by 2040  
 Gas milestone: No new gas connections to any residential property  
 Reserve consumed: ~1.35 billion boe  
 Reserve remaining: ~4.40 billion boe

#### PHASE 4: DEEP TRANSITION I (2041-2045)

Production corridor: 180-240 MMboe/year  
 Primary driver: Commercial and heavy vehicles electrifying;  
 district heating networks operational;  
 gas in power generation <10%  
 EV milestone: 85% of total vehicle fleet is EV by 2045  
 Gas milestone: All residential gas boilers replaced by 2045  
 Reserve consumed: ~1.05 billion boe  
 Reserve remaining: ~3.35 billion boe

#### PHASE 5: DEEP TRANSITION II (2046-2050)

Production corridor: 120-180 MMboe/year  
 Primary driver: Near-complete EV fleet transition;  
 industrial process electrification;  
 gas in power <5% (backup only)  
 EV milestone: 95%+ of all vehicle fleet is EV or hydrogen by 2050  
 Gas milestone: Gas-fired power <5% (strategic backup only)  
 Reserve consumed: ~0.75 billion boe  
 Reserve remaining: ~2.60 billion boe

#### PHASE 6: TRANSPORT ELECTRIFICATION COMPLETE (2051-2060)

Production corridor: 50-130 MMboe/year  
 Primary driver: Final ICE vehicle retirement programme;  
 SAF production from civic refineries for aviation;  
 industrial hydrogen transition  
 EV milestone: 99% of all road vehicles electric or hydrogen by 2060  
 Gas milestone: Residential and commercial gas networks decommissioned  
 Reserve consumed: ~0.90 billion boe  
 Reserve remaining: ~1.70 billion boe

#### PHASE 7: GAS OBSOLESCENCE I (2061-2065)

Production corridor: 30-75 MMboe/year  
 Primary driver: Industrial gas replacement complete;  
 aviation running entirely on SAF or hydrogen;  
 marine fuels transition complete  
 EV milestone: Complete fleet electrification maintained  
 Gas milestone: Gas grid decommissioned; strategic backup only  
 Reserve consumed: ~0.26 billion boe  
 Reserve remaining: ~1.44 billion boe

#### PHASE 8: GAS OBSOLESCENCE II (2066-2070)

Production corridor: 15-50 MMboe/year  
 Primary driver: Hydrocarbon production limited to industrial feedstocks  
 Gas milestone: Gas usage <1% of national energy consumption  
 Reserve consumed: ~0.16 billion boe  
 Reserve remaining: ~1.28 billion boe

#### PHASE 9: FEEDSTOCK ONLY (post-2070)

Production corridor: 0–25 MMboe/year  
 Primary driver: Petrochemicals, pharmaceuticals, materials only  
 Reserve consumed: ~0.25 billion boe over 20 years  
 Reserve remaining: ~1.03 billion boe (permanent endowment)

TOTAL DEPLETION 2026–2090: ~8.4 billion boe (central case)  
 Consistent with 9.4 billion boe planning case (0.7 billion boe buffer)

## Chapter 9 — EV Adoption Schedule & Infrastructure Plan

The electrification of road transport is the primary mechanism through which domestic oil demand falls from its current level. The EV adoption schedule is not aspirational; it is the mechanistic expression of the Depletion Corridor. As EV fleet share rises, domestic demand for petrol and diesel falls, extraction quotas fall, and the CRF revenue curve follows. All three must be internally consistent.

### 9.1 The UK Vehicle Fleet: Baseline Data

The UK vehicle fleet comprises approximately 40 million registered vehicles (passenger cars, vans, lorries, motorcycles). Annual new vehicle registrations average 2.2–2.5 million. At current retirement rates (vehicles kept for an average of 14 years), replacing the entire fleet takes approximately 16–18 years from the point of all-EV new vehicle sales.

Vehicle Category	Fleet Size (2026)	Annual New Reg.	Target Full EV Date	Notes
Passenger cars	33.5 million	1.75 million/yr	Fleet: 2058–2062	Fastest transition; charging infrastructure most scalable
Light commercial vans	5.0 million	300,000/yr	Fleet: 2062	Second fastest; depot charging model
Rigid HGV (heavy goods)	450,000	35,000/yr	Fleet: 2065	Battery or hydrogen; trial fleets by 2030
Articulated HGV	110,000	12,000/yr	Fleet: 2068	Hydrogen-electric or catenary; most challenging
Buses & coaches	90,000	8,000/yr	Fleet: 2055	Depot charging; many routes already EV in 2026
Motorcycles/mopeds	1.2 million	70,000/yr	Fleet: 2060	Small battery; rapid transition expected
Agricultural vehicles	n/a	n/a	2070+	Diesel retained until green alternatives mature

## 9.2 EV Adoption Milestones Table

Year	New EV Sales Share	Total EV Fleet Share	ICE Fleet Remaining	Domestic Petrol/Diesel Demand
2026 (baseline)	~30%	~5%	~95%	~100% of 2019 level
2028	50%	10%	90%	93%
2030	70%	18%	82%	85%
2032	85%	28%	72%	74%
2035	100%	42%	58%	60%
2038	100% (4 yrs)	58%	42%	47%
2040	100%	67%	33%	39%
2042	100%	76%	24%	31%
2045	100%	87%	13%	20%
2048	100%	94%	6%	12%
2050	100%	97%	3%	8%
2055	100%	99.5%	<1%	4% (feedstock, aviation, marine)
2060	100%	99.9%	<0.1%	2% (aviation, marine, industrial)

*Demand Reduction Rationale: By 2035, with 42% of the fleet electric and 100% of new sales EV, domestic petrol and diesel demand has fallen by ~40% from its 2019 peak. This demand reduction is structurally consistent with the depletion corridor reducing production by ~20% over the same period — meaning the CRA does not face the impossible arithmetic of falling demand and rising production simultaneously. The two curves are designed to converge.*

## 9.3 National Charging Infrastructure Plan

The Civic Charging Infrastructure Authority (CCIA) is established as a wholly civic body responsible for planning, building, and operating the national public charging network. The CCIA does not preclude private charging (at homes, workplaces, and private operators); it ensures that public charging is available universally, including in rural areas, remote communities, and locations that the private market would not serve.

Charging Network Tier	Specification	Target Coverage	Timeline
<b>Rapid DC hubs (150+ kW)</b>	Minimum 12 rapid chargers per hub; 30-minute charge for 200-mile range; located at motorway services, key A-roads, civic centres	Every 25 miles on all A-roads; all motorway services	All major routes by 2029; full coverage by 2032
<b>Town centre civic chargers (50-100 kW)</b>	Minimum 4 per medium town centre; accessible 24/7; priced at CCIA cost-plus rate	All towns >5,000 population	By 2030
<b>Rural community chargers (22-50 kW)</b>	Minimum 2 per community of >500 residents; located at civic common buildings (schools, community halls); solar-integrated	Every community >500 residents	By 2032

Charging Network Tier	Specification	Target Coverage	Timeline
Night-rate home charging (smart grid)	Smart meter-integrated home charger subsidy for all residents without private parking; street charging nodes for urban flats	All residential streets	Smart grid rollout 2027-2033
Freight charging (depot and en-route)	Megawatt-scale charging at all freight hubs; catenary on key freight A-roads and motorways (M1, M6, A14 priority)	All major freight routes	Catenary pilot 2029; full coverage 2038

## Chapter 10 – Grid Reinforcement Schedule

The electrification of transport and heating places a substantially larger demand on the national electricity grid. The Grid Transition Fund (40% of CRF annual revenues) finances this reinforcement. The scale of investment required is large but not unprecedented: it is comparable in real terms to the post-war electrification of rural Britain in the 1950s and 1960s.

### 10.1 Grid Reinforcement Requirements

Grid Investment Category	Investment Required (2026-2045)	Timeline	CRF Allocation
Transmission network reinforcement (National Grid)	£15-20 billion	2026-2035 (priority)	£12 billion from Grid Transition Fund
Distribution network upgrade (local grids)	£20-30 billion	2026-2040	£20 billion from Grid Transition Fund
Grid-scale battery storage (multi-GWh)	£8-12 billion	2027-2038	£8 billion from Grid Transition Fund
Pumped hydro expansion (Scotland, Wales)	£6-10 billion	2028-2040	£5 billion from Grid Transition Fund
Smart meter & demand management rollout	£4-6 billion	2026-2032	£4 billion from Grid Transition Fund
Offshore wind grid connection (new farms)	£10-15 billion	2026-2040	Co-funded: CRF + Civic Infrastructure Fund
Nuclear (SMR fleet, 10 GW target by 2040)	£30-50 billion	2028-2042	CRF bridge loan; repaid through generation revenue
<b>TOTAL GRID INVESTMENT</b>	<b>£93-143 billion</b>	<b>2026-2045</b>	<b>CRF contributes ~£49 billion</b>

*Grid Investment Affordability: The CRF Grid Transition Fund allocation totals approximately £3.0-3.7 billion per year through the 2030s. Combined with private investment from civic pension funds and the existing National Grid infrastructure investment programme, the required grid reinforcement is fully fundable within the CRF financial projections. This is not a speculative number: the Climate Change Committee and National Grid ESO have both modelled comparable investment requirements under their net-zero scenarios.*

## Chapter 11 – Gas Phase-Out Schedule

The target of near-zero gas usage by 2070 requires a structured 45-year phase-out programme covering three distinct sectors: residential and commercial heating (the largest gas consumption category), electricity generation (the most technically complex), and industrial process heat (the most technically challenging). Each sector has a different replacement technology, a different timeline, and a different governance challenge.

### 11.1 Gas Consumption Baseline (2026)

Sector	Gas Consumption (2026)	% of Total Gas	Primary Replacement Technology
Residential heating (gas boilers)	~520 TWh/year	~43%	Heat pumps; district heat; heat networks; thermal mass (Hearth Block for rural)
Electricity generation (CCGT plants)	~310 TWh/year	~26%	Nuclear (SMR); offshore wind; pumped hydro; grid storage
Industrial process heat	~220 TWh/year	~18%	Electric arc furnaces; industrial heat pumps; green hydrogen; electrification
Commercial heating (offices, retail)	~90 TWh/year	~8%	District heat networks; heat pumps; building electrification
Other (cooking, drying, misc.)	~60 TWh/year	~5%	Induction; electric heat; hydrogen (selective)
<b>TOTAL UK GAS CONSUMPTION</b>	~1,200 TWh/year	100%	Full electrification + hydrogen backup by 2070

### 11.2 The Gas Phase-Out Timeline

Period	Sector Target	Policy Instrument	Gas Volume Remaining
2027-2030	No new gas boiler installations; no new gas grid connections	Gas boiler ban in new builds (2028); CRF subsidy for heat pump installation (£5,000/household from 2027)	~1,150 TWh/year
2031-2035	All new commercial buildings off gas; 25% of residential boilers replaced	Mandatory replacement at point of sale; social housing gas phase-out complete by 2033	~900 TWh/year
2036-2040	50% of residential boilers replaced; gas power <20%	Replacement grant programme for all remaining households; CCGT retirement schedule; 10 GW SMR fleet commissioned	~620 TWh/year
2041-2045	75% of residential boilers replaced; all residential new	Compulsory replacement programme with zero-interest CRF loan for costs	~350 TWh/year

Period	Sector Target	Policy Instrument	Gas Volume Remaining
	builds off gas; gas power <10%	above £5,000; final CCGT stations moved to peaking-only	
2046-2050	All residential gas eliminated; gas power <5% (strategic backup only)	Final residential replacement deadline; gas distribution network decommissioning begins in low-density areas	~120 TWh/year
2051-2060	Commercial and industrial gas phase-out; gas grid decommissioning	Industrial electrification mandate; district heat networks in all urban centres; gas grid legal decommissioning date set	~40 TWh/year
2061-2070	Gas usage <1% of national energy; feedstock applications only	Gas grid fully decommissioned except strategic backup nodes; green hydrogen replaces remaining industrial gas	<10 TWh/year

### 11.3 Gas Plant Retirement Schedule

Gas Plant Type	2026 Capacity	Retirement Timeline	Replacement
Combined Cycle Gas Turbines (CCGT) baseload	~28 GW operational	No new contracts from 2028; baseload retirement 2030-2042	Nuclear SMR fleet (10 GW by 2040); offshore wind; grid storage
CCGT peaking/mid-merit	~10 GW	Converted to peaking/backup role 2030-2045; final retirement 2050	Grid-scale battery storage; demand response; hydrogen-ready combustion turbines
Open Cycle Gas Turbines (OCGT)	~5 GW	Hydrogen-ready conversion by 2035; hydrogen operation 2035-2060; retirement 2060	Green hydrogen combustion for final grid balancing; replaced by long-duration storage post-2055
Gas CHP (combined heat and power)	~2 GW distributed	Retirement at end-of-life; no replacement with gas; replaced with electric CHP or waste heat	Electric CHP; waste-heat recovery; geothermal

### 11.4 Industrial Feedstock Allocation Post-2070

After 2070, hydrocarbon production continues only for industrial feedstock applications where no economically and technically viable alternative exists. The following allocation framework governs the post-2070 feedstock carve-out:

- Petrochemical feedstocks for plastics, polymers, resins, and synthetic rubber: allocated by the ASEA annually on a needs-basis; target to reduce by 30% per decade through circular economy and bio-based alternatives.
- Pharmaceutical feedstocks (active pharmaceutical ingredients, excipients): highest protection category; maintained until bio-synthesis alternatives are fully validated and approved.
- Lubricants and specialty chemicals with no synthetic alternative: assessed case by case by CRA technical panel.

- Speciality anode coke for EV battery and electronics manufacturing (Humber Civic Refinery): maintained as strategic industrial asset; this is a non-fuel use that directly supports the EV transition.
- Aviation kerosene: NOT included as a qualifying feedstock application after 2075; by that date, SAF and hydrogen aviation are assumed to be the applicable standard.

*Post-2070 Feedstock Principle: The NRS Act does not permit hydrocarbon extraction after 2070 for any use that could be served by a technically available and economically comparable alternative. The ASEA reviews the qualifying feedstock list annually. Any application that ceases to meet the necessity test is removed without compensation to the licensee.*

# VOLUME IV

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## Infrastructure Build-Out

*Refinery Construction · Port & Pipeline Upgrades · Charging Network · Grid Storage*

# Chapter 12 – The Five-Refinery Build Programme

The civic refinery programme is the most capital-intensive element of the DD&SA Energy Sovereignty Framework. It must be executed with engineering precision, on a timeline that guarantees continuous domestic fuel supply during the transition, and within a budget framework that the CRF can sustain without borrowing beyond its revenue capacity. This chapter provides the full engineering and programme specification for each of the five civic refineries.

## 12.1 Priority 1: Pembroke Civic Refinery (operational 2027)

### Site & Acquisition

The Pembroke refinery at Rhoscowther, Pembrokeshire, is the DD&SA programme's first acquisition priority because: (i) Valero is a single-asset operator in the UK and is most exposed to the declining demand environment; (ii) Pembroke is critical to Welsh and South West England supply; (iii) early civic acquisition provides the CRA with immediate operational experience in refinery management before tackling the more complex Fawley and Humber facilities.

Specification	Detail
<b>Nameplate capacity</b>	270,000 barrels per day (270 kb/d)
<b>Current operator</b>	Valero Energy Corporation (Texas, USA)
<b>Acquisition mechanism</b>	Compulsory civic acquisition under NRS Act; fair compensation for capital sunk; Valero offered 3-year technical management contract
<b>Acquisition cost estimate</b>	£1.8–2.4 billion, payable from CRF in three tranches over 18 months
<b>Post-acquisition capacity target</b>	220,000 kb/d (right-sized to 2030 demand projections for Wales/SW)
<b>Products mix (2027-2040)</b>	Petrol: 30%; Diesel: 30%; Jet fuel: 20%; Fuel oil: 10%; Feedstocks: 10%
<b>Products mix (2040-2055)</b>	Diesel (HGV): 25%; Jet/SAF: 30%; Feedstocks: 30%; Lubricants: 15%
<b>Products mix (2055-2070)</b>	SAF: 40%; Feedstocks: 45%; Lubricants: 15%
<b>Workforce</b>	~500 current employees retained under Civic Employment Act terms; new permanent contracts; pay equalisation to Civic Employment Standard
<b>Hydrogen transition</b>	Green hydrogen unit commissioned 2030 using tidal and offshore wind electricity from Celtic Sea
<b>SAF unit</b>	SAF conversion unit commissioned 2034; uses waste agricultural oils from Welsh farmland
<b>CO<sub>2</sub> reduction target</b>	30% reduction in process emissions by 2035 vs 2026 baseline; 70% reduction by 2045

## 12.2 Priority 2: Fawley Civic Refinery (operational 2027)

Fawley is the largest refinery in the United Kingdom and the sole refinery serving London and the South East. Its strategic importance is irreplaceable: it connects to a 700km pipeline network that supplies Heathrow, Gatwick, and Stansted airports and provides approximately 20% of total UK

refinery capacity. Civic acquisition of Fawley is a national security imperative. At the same time, ExxonMobil's extensive petrochemical operation at Fawley is a distinct and valuable enterprise that shall be separated from the crude refinery operations and offered a long-term lease under civic terms.

Specification	Detail
<b>Nameplate capacity</b>	270,000 barrels per day
<b>Current operator</b>	ExxonMobil Corporation (US). Separate petrochemical complex on same site.
<b>Acquisition mechanism</b>	Compulsory civic acquisition of refinery operations only; ExxonMobil petrochemical operations offered 20-year lease at fair commercial terms
<b>Acquisition cost estimate</b>	£2.2–3.0 billion (refinery only)
<b>Post-acquisition target</b>	240,000 kb/d (right-sized; petrochemical feed demand growing)
<b>Critical product: aviation kerosene</b>	Fawley is the primary source for Heathrow/Gatwick/Stansted jet fuel. Aviation supply security maintained as absolute priority through transition.
<b>Critical product: speciality chemicals</b>	ExxonMobil petrochemical complex (halobutyl rubber for EV tyres; base oils) retained under lease; civic benefit through lease income
<b>Pipeline network</b>	700km pipeline to London, Heathrow, Gatwick transferred to NPSA ownership; operated by NPSA; Fawley Civic Refinery remains anchor supplier
<b>Workforce</b>	~2,500 direct employees (refinery + petrochemical). Refinery staff transfer to civic employment. Petrochemical staff remain under ExxonMobil lease.
<b>SAF transition</b>	SAF pilot unit 2032; full SAF conversion capability 2038. Heathrow jet supply transitions to SAF blend from 2035.

### 12.3 Priority 3: Humber Civic Refinery (operational 2028)

The Humber refinery at South Killingholme is a critical industrial asset beyond its fuel-producing function. Its speciality anode coke production — it is the only European facility producing speciality anode coke for EV batteries and electronics — makes it a strategic asset for the energy transition itself. The DD&SA framework views Humber not merely as a fuel refinery but as an industrial transition asset that must be publicly owned and protected through the long transition period.

Specification	Detail
<b>Nameplate capacity</b>	221,000 barrels per day
<b>Current operator</b>	Phillips 66 Corporation (Texas, USA)
<b>Acquisition mechanism</b>	Compulsory civic acquisition; Phillips 66 offered 5-year technical services contract during transition at market rate
<b>Acquisition cost estimate</b>	£1.4–1.9 billion
<b>Strategic priority product</b>	Speciality anode coke for EV batteries: this product must be protected and expanded. DD&SA makes Humber the national civic EV materials production centre.
<b>Anode coke expansion</b>	Current capacity: sufficient for ~2 million EV batteries per year. Post-civic expansion: 6 million EV batteries per year by 2032.
<b>Fuel products (declining)</b>	Diesel and petrol: 45% of throughput in 2028 declining to <10% by 2050

Specification	Detail
<b>Petrochemical feedstocks</b>	25% of throughput in 2028; 60% by 2050 as fuel demand falls; maintained as last-standing refinery function post-2060
<b>Carbon capture pilot</b>	Humber is the priority site for CCS (Carbon Capture and Storage) integration, given Humber estuary proximity to North Sea storage sites. CCS operational 2032.
<b>Workforce</b>	~1,100 direct employees; retained and expanded for anode coke production and CCS operations

## 12.4 Priority 4: East Coast Civic Refinery at Grangemouth (operational 2029)

The closure of Grangemouth in April 2025 was the most significant strategic energy failure in the United Kingdom since the 1970s. Scotland produces the majority of UK North Sea crude and now has no domestic refining capacity. The DD&SA framework treats the redevelopment of Grangemouth as a constitutional obligation — not an economic discretion — because the residents of Scotland are entitled to benefit directly from resources extracted from under their territorial waters.

Specification	Detail
<b>Site</b>	Grangemouth, Firth of Forth, Scotland (existing industrial site)
<b>Former capacity</b>	150,000 b/d (at closure); Petroineos converting to import terminal
<b>Civic development plan</b>	CRA acquires site from Petroineos. New civic refinery commissioned on existing infrastructure. Target 120,000 b/d by 2029.
<b>Acquisition cost</b>	£800m–1.2 billion (site + new-build on infrastructure)
<b>North Sea supply advantage</b>	Grangemouth is directly connected to the Forties Pipeline System (FPS), which transports crude from 200+ North Sea fields. Under CRA ownership, FPS ensures direct feed of Scottish crude to Scottish civic refinery. No longer exported raw for foreign refining.
<b>Petrochemical complex</b>	Existing petrochemical plant at Grangemouth (ethylene, propylene) acquired and operated as civic industrial asset; critical for Scottish chemical industry
<b>Workforce</b>	New civic refinery employs 600-800 people; replaces jobs lost at 2025 closure
<b>Finnart Ocean Terminal</b>	Loch Long terminal (connected to Grangemouth by pipeline) re-acquired by NPSA; strategic crude import capability for North Sea supplementation maintained
<b>Scotland fuel security</b>	East Coast Civic Refinery provides 65%+ of Scotland's fuel requirements domestically by 2030; Scotland is no longer a net fuel importer
<b>Modular build</b>	New-build units on existing foundation infrastructure; modular design permits capacity reduction as demand falls post-2040 without full closure

## 12.5 Priority 5: North Scotland Civic Refinery (operational 2032)

Specification	Detail
<b>Location</b>	Nigg Bay, Cromarty Firth, Ross-shire (preferred) or Ardersier industrial site
<b>Capacity</b>	80,000 b/d (smaller than other civic refineries; sized for North Scotland + Highland demand)
<b>Capital cost</b>	£1.0–1.5 billion (greenfield build)
<b>Rationale</b>	North Scotland and the Highlands/Islands have no local refining capacity. Nigg Bay sits adjacent to active North Sea fields; North Sea crude supply is direct and short.
<b>Products</b>	Transport fuels for North Scotland and Highland; heating kerosene (significant demand in area without gas network); jet fuel for Inverness Airport; marine fuel for North Sea support vessels
<b>Modular design</b>	Three identical 27,000 b/d process trains; trains can be commissioned sequentially and retired individually as demand falls; last train converts to SAF production post-2050
<b>Offshore wind integration</b>	Cromarty Firth area has outstanding offshore wind resource; North Scotland Civic Refinery to be zero-fossil-fuel energy user by 2038 using dedicated offshore wind power
<b>Port infrastructure</b>	Nigg fabrication yard infrastructure (existing) adapted for crude tanker offloading; new jetty construction: £80-120m

## 12.6 Priority 6: Northern Ireland Civic Refinery (operational 2034)

Specification	Detail
<b>Location</b>	Belfast Lough or Larne (deep-water access required for tanker operations)
<b>Capacity</b>	40,000 b/d (sized for NI domestic demand only)
<b>Capital cost</b>	£600–900 million (greenfield build)
<b>Current NI supply situation</b>	Northern Ireland has no refinery; all refined products are imported by road tanker from England/Wales or by ship from Irish Sea routes. Supply resilience is minimal.
<b>Products</b>	Transport fuels for NI; heating oil (NI has minimal gas network; heating oil is dominant); aviation fuel for Belfast City and Belfast International airports
<b>Irish Republic coordination</b>	NI Civic Refinery designed to supply Republic of Ireland customers at DFPB equivalent price, subject to reciprocal supply agreement. This supports all-island energy resilience.
<b>Offshore gas transition role</b>	Existing NI gas connections (primarily through Scotland via Moffat interconnector) maintained through gas phase-out period; NI Civic Refinery provides heating oil backup as gas is phased out in NI (which has lower gas penetration)

## Chapter 13 – Port, Pipeline & Storage Infrastructure

### 13.1 National Pipeline Authority Programme

The NPSA acquires and operates all strategic pipeline infrastructure. The following programme is the first-five-years build list.

Project	Investment	Timeline	Strategic Purpose
Forties Pipeline System acquisition from Repsol Sinopec	£400-600m	2027	Direct North Sea crude to East Coast Civic Refinery; end Repsol tolling fees
New North Scotland distribution pipeline (Grangemouth to Inverness/Nigg)	£180-250m	2028-2030	Connect East Coast and North Scotland refineries; eliminate road tanker dependency in Highlands
UKOP acquisition from Ineos/shareholders	£200-350m	2027-2028	Southern England multi-product distribution; Fawley to Thames Estuary and Midlands
Fawley pipeline network (NPSA operation)	£100m (upgrade)	2027-2029	Upgrade metering and monitoring; smart pipeline management; Heathrow supply security
Northern Ireland cross-channel pipeline feasibility	£25m (study)	2028-2030	Assess viability of subsea pipeline from Scotland/North West England to NI as alternative to tanker supply
Milford Haven LNG terminal (NPSA lease)	£50m/yr (lease)	2027-2040	Maintain LNG import capability during gas transition period; strategic backup; convert to hydrogen import terminal post-2055
Salt cavern strategic storage (Cheshire, Yorkshire)	£800m-1.2bn	2027-2033	Underground crude and product storage; target 90 days reserve by 2032
Nigg Bay crude terminal (new jetty)	£80-120m	2029-2031	Enable tanker offloading for North Scotland Civic Refinery

## Chapter 14 – Grid-Scale Storage & Renewable Integration

### 14.1 Storage Technology Mix

Storage Technology	Capacity Target (2040)	CRF Investment	Primary Function
Lithium-ion grid batteries (4-hour)	15 GWh installed	£3.5 billion	Frequency response; short-duration peak shaving; solar integration

Storage Technology	Capacity Target (2040)	CRF Investment	Primary Function
Long-duration battery (8-24 hour)	8 GWh installed	£2.5 billion	Evening demand peak; overnight EV charging smoothing
Pumped hydro (existing + new)	30 GWh effective (Dinorwig + 3 new Scottish sites)	£4.0 billion	Multi-day storage; baseload backup; seasonal balancing
Compressed air (geological, salt caverns)	5 GWh	£1.2 billion	Long-duration seasonal backup; no self-discharge
Green hydrogen (electrolysis + storage)	10 TWh seasonal storage capacity by 2045	£6.0 billion	Seasonal energy balancing; industrial feedstock; zero-emission backup generation
Thermal storage (district heat networks)	Distributed; equivalent 5 TWh	£2.0 billion	Demand-shifting in heating sector; avoids grid peaks
<b>TOTAL GRID-SCALE STORAGE</b>	~68 GWh electricity equivalent + 10 TWh hydrogen	£19.2 billion	Full grid balancing for 100% renewable/nuclear base by 2045

## 14.2 Nuclear Small Modular Reactor Fleet

The DD&SA Energy Sovereignty Framework supports a civic nuclear programme based on Small Modular Reactors (SMRs) as the dispatchable low-carbon backbone of the post-gas electricity system. SMRs are preferred over large conventional nuclear on the grounds of: (i) shorter construction time (5-7 years vs 12-15 years); (ii) lower individual capital cost and therefore lower financial risk; (iii) siting flexibility enabling placement near industrial clusters; and (iv) modular scalability.

SMR Deployment Tranche	Sites	Capacity	Online Date	CRF Bridge Finance
Tranche 1 (pilot)	Wylfa (Anglesey); Oldbury-on-Severn (Gloucestershire)	2 x 470 MW = 940 MW	2031-2033	£4.0 billion (repaid from generation revenue by 2045)
Tranche 2 (scale-up)	Hartlepool; Heysham; Hinkley Point area; Sizewell area	4 x 470 MW = 1,880 MW	2033-2036	£7.5 billion
Tranche 3 (full programme)	Torness (Scotland); Hunterston (Scotland); Dungeness; plus 4 industrial cluster sites	8 x 470 MW = 3,760 MW	2036-2040	£15.0 billion
Tranche 4 (completion)	6 further sites including Welsh and Northern England clusters	6 x 470 MW = 2,820 MW	2040-2042	£11.0 billion
<b>TOTAL SMR FLEET</b>	~20 sites	9,400 MW (9.4 GW)	Fully operational by 2042	£37.5 billion (CRF bridge)

**SMR Financing Rationale:** The CRF bridge finance for the SMR programme totals £37.5 billion. This represents approximately 4 years of full CRF annual revenues. The SMRs generate electricity sold at a Civic Price equivalent to the DFPB (cost-plus); at 9.4 GW

*capacity factor of 90%, they generate approximately 74 TWh/year of electricity, worth approximately £7.4 billion/year at £100/MWh civic price. The bridge finance is fully repaid within 5-6 years of commissioning. SMRs then generate civic revenues indefinitely — converting the fossil fuel endowment into a permanent nuclear energy endowment.*

# VOLUME V

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## **Economic & Fiscal Architecture**

*Cost Models · Revenue Projections · Fuel Pricing · Industrial Competitiveness*

## Chapter 15 – Comprehensive Cost Model

The DD&SA Energy Sovereignty Framework requires substantial capital investment in the first decade of implementation. This chapter provides the full cost model, phased by programme element, with sources of finance identified. The model demonstrates that the framework is self-financing within its own revenue envelope; it does not require permanent borrowing, does not place net fiscal pressure on the Civic Commonwealth budget, and is structured to generate a permanent sovereign wealth fund from a depleting geological asset.

### 15.1 Capital Investment Summary (2026-2040)

Programme Element	2026-2030	2031-2035	2036-2040	Total 2026-2040
Civic refinery acquisition (Pembroke, Fawley, Humber)	£5.4-7.3bn	--	--	£5.4-7.3bn
East Coast Civic Refinery (Grangemouth redevelopment)	£0.8-1.2bn	--	--	£0.8-1.2bn
North Scotland Civic Refinery (greenfield)	£0.5bn	£0.5-1.0bn	--	£1.0-1.5bn
Northern Ireland Civic Refinery (greenfield)	--	£0.3-0.5bn	£0.3-0.4bn	£0.6-0.9bn
Pipeline & storage infrastructure (NPSA)	£1.5-2.0bn	£1.0-1.5bn	£0.5-1.0bn	£3.0-4.5bn
Salt cavern strategic reserves	£0.5-0.7bn	£0.3-0.5bn	--	£0.8-1.2bn
Civic Charging Infrastructure Authority	£2.0-3.0bn	£1.5-2.0bn	£1.0-1.5bn	£4.5-6.5bn
Grid reinforcement (CRF contribution)	£5.0-7.0bn	£6.0-8.0bn	£6.0-8.0bn	£17-23bn
SMR nuclear programme (CRF bridge)	£2.0bn	£8.5bn	£15.0bn	£25.5bn
Grid-scale storage (CRF contribution)	£2.0-3.0bn	£4.0-5.0bn	£5.0-7.0bn	£11-15bn
Heat pump subsidy programme	£1.5-2.0bn	£3.0-4.0bn	£4.0-5.0bn	£8.5-11bn
Geological survey & reserve assessment	£0.2bn	£0.2bn	£0.2bn	£0.6bn
CRA administration & CEW	£0.1bn	£0.1bn	£0.1bn	£0.3bn
<b>TOTAL CRF CAPITAL COMMITMENTS</b>	<b>£21-27bn</b>	<b>£25-31bn</b>	<b>£32-37bn</b>	<b>£78-95bn</b>

*Affordability Check: CRF annual revenues in the 2026-2040 period average approximately £8-9 billion per year, giving cumulative CRF revenues of approximately £120-135 billion over 14 years. Total capital commitments in the same period are £78-95 billion. The capital programme is fully funded within CRF revenues, with £25-55 billion remaining after all capital commitments — this is the accumulating permanent CRF balance that underpins the sovereign wealth fund and the post-depletion civic endowment.*

## 15.2 Fuel Price Impact on Residents

The domestic fuel pricing reform is the most immediate and visible benefit to residents. Under the DFPB, domestic fuel prices are decoupled from international commodity speculation. The following analysis compares DFPB prices against current market prices.

DOMESTIC FUEL PRICE COMPARISON – ILLUSTRATIVE 2028 (DFPB FULLY OPERATIONAL)		
	Current (2026)	DFPB (2028)
<b>PETROL (per litre)</b>		
International crude component:	~55p	19p (DFPB extraction)
Refining:	~12p	5p (civic refinery)
Distribution:	~6p	3p (NPSA)
Fuel duty (unchanged):	~58p	58p (no change)
VAT (on fuel duty+price, 20%):	~25p	17p
Retail margin:	~8p	4p (regulated)
-----		
TOTAL PUMP PRICE:	~164p/litre	~106p/litre
RESIDENT SAVING:	---	~58p/litre (35% reduction)
<b>DIESEL (per litre)</b>		
All components as above, plus:		
Desulphurisation premium:	~8p	4p (civic)
-----		
TOTAL PUMP PRICE:	~175p/litre	~112p/litre
RESIDENT SAVING:	---	~63p/litre (36% reduction)
<b>HOME HEATING OIL (per litre)</b>		
(Northern Scotland and NI specific)		
TOTAL DELIVERED PRICE:	~90p/litre	~52p/litre
RESIDENT SAVING:	---	~38p/litre (42% reduction)
<b>AVIATION KEROSENE (per litre)</b>		
TOTAL PRICE (ex-duty):	~70p/litre	~42p/litre
AIRLINE SAVING:	---	~28p/litre (40% reduction)
Note: benefit passed to passengers through airfare regulation.		
NOTE: Fuel duty is unchanged under the DD&SA framework. The fuel duty is the civic taxation element; the DFPB reform eliminates the speculation premium, not the duty.		

## 15.3 Industrial Competitiveness Analysis

UK industry is currently disadvantaged relative to competitors in Norway (where the state extracts and prices oil domestically through Equinor/Petoro), in France (where EDF/state pricing suppresses energy costs), and in the Gulf states (where full state ownership eliminates rent extraction by international capital). The DFPB corrects this competitive disadvantage in the following industries:

Industry	Current Disadvantage	DFPB Benefit	Estimated Annual Saving
<b>Petrochemicals (feedstock costs)</b>	UK producers pay international crude price for naphtha feedstock; continental competitors with state refineries pay less	Naphtha at DFPB (cost-plus) price; 30-40% feedstock cost reduction	£200-400m/yr for UK petrochemical sector
<b>Plastics and polymers manufacturing</b>	High feedstock costs; energy-intensive processing at market rate	Cheaper feedstocks + civic electricity price benefit	£150-250m/yr

Industry	Current Disadvantage	DFPB Benefit	Estimated Annual Saving
Pharmaceuticals (API production)	Solvent and feedstock costs at international market price	DFPB pricing for all petrochemical inputs	£80-150m/yr
Steel (blast furnace coke)	Coking coal and coke at international price; carbon cost burden	Post-Humber transition: anode coke and hydrogen at civic price	£100-200m/yr
Aviation sector	Jet fuel at international market price + speculative premium	Aviation kerosene at DFPB: 40% cost reduction from 2028	£600m-1.2bn/yr for UK airlines
Road haulage and distribution	Diesel at international price + speculation premium	Diesel at DFPB: 36% cost reduction; savings passed to supply chain	£1.5-2.5bn/yr sector-wide
Fishing fleets	Marine diesel at full international price; significant operating cost	Marine diesel at DFPB; estimated 40% reduction in fuel cost	£60-90m/yr for UK fishing fleet

## 15.4 Civic Dividend Analysis

The Civic Dividend — 25% of annual CRF revenues distributed equally to every resident — provides a direct material benefit of the Energy Sovereignty Framework to every person in the Civic Commonwealth, regardless of whether they drive a car, heat with oil, or have any other direct relationship with the hydrocarbon economy.

Year	Annual CRF Revenue	Civic Dividend Pool (25%)	Per-Resident Amount (50m residents)
2028 (first full year)	£9.3 billion	£2.33 billion	£466/person/year
2030	£9.0 billion	£2.25 billion	£450/person/year
2035	£7.5 billion	£1.88 billion	£375/person/year
2040	£6.0 billion	£1.50 billion	£300/person/year
2045	£4.3 billion	£1.08 billion	£215/person/year
2050	£2.8 billion	£0.70 billion	£140/person/year
2055	£1.4 billion	£0.35 billion	£70/person/year
2060	£0.8 billion	£0.20 billion	£40/person/year
Post-2070 (perpetual endowment income)	~£4.0 billion	£1.0 billion	~£20/person/year (perpetual)

*The Civic Dividend is not welfare; it is a resource dividend — the direct financial expression of resident ownership of natural resources. Every person in the Civic Commonwealth owns a share of the oil and gas beneath their territorial waters. The Civic Dividend is the periodic payment of that share's value. It is analogous to the Alaska Permanent Fund Dividend, which has paid every Alaskan resident a resource dividend every year since 1982. The DD&SA framework applies this principle at national scale.*

# VOLUME VI

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## Implementation Protocols

*10-Year Plan · Risk Analysis · Monitoring & Evaluation · Resident Communication*

# Chapter 16 – The 10-Year Implementation Plan (2026-2036)

The first ten years of the DD&SA Energy Sovereignty Framework are the most operationally intensive. The constitutional architecture must be enacted, the refineries acquired, the NPSA and CRF established, the ASEA convened, and the first elements of grid reinforcement and charging infrastructure deployed — all while maintaining uninterrupted domestic fuel supply. This chapter provides the year-by-year critical path.

## 16.1 Year 1 (2026): Constitutional Enactment

- Enact the Natural Resource Sovereignty Act (DDSA-LEG-NRS-001) as the first act of the Civic Commonwealth legislature under DD&SA governance.
- Establish the Civic Resource Authority: appoint interim board (nine members per Clause 6 process); establish offices in Aberdeen (operational headquarters, proximity to North Sea industry) and London (policy and regulatory functions).
- Convene the first Annual Sortition Energy Assembly: 300 residents selected by stratified sortition; first session sets baseline extraction quotas, commissions geological survey, and approves initial DFPB.
- Establish the Civic Resource Fund: open accounts; set up governance structures; appoint Fund Council members; begin accumulating licence fees from existing operators under transitional arrangements.
- Establish the Civic Energy Watchdog: five-member panel selected by public sortition; publish first baseline report on UK energy system status.
- Issue compulsory acquisition notices to Valero (Pembroke), ExxonMobil (Fawley), and Phillips 66 (Humber): initiate valuation process; appoint independent valuers; open compensation negotiations.
- Commission full independent geological survey and reserve assessment: peer-reviewed; published; forms baseline for all subsequent depletion corridor decisions.
- Designate Petroineos Grangemouth site as a Civic Development Zone: suspend conversion to import-terminal-only; CRA takes development control.

## 16.2 Year 2 (2027): First Acquisitions & Infrastructure Transfer

- Complete Pembroke acquisition: Valero compensation paid from CRF; Pembroke Civic Refinery operational under CRA management; DFPB applied to all Pembroke output; Valero retained on 3-year technical management contract.
- Complete Fawley acquisition: ExxonMobil refinery operations transferred; ExxonMobil petrochemical operations commence 20-year lease at civic terms; NPSA takes ownership of Fawley pipeline network.
- NPSA established: acquires Forties Pipeline System from Repsol Sinopec; acquires UKOP; takes operational control of strategic pipelines; begins smart monitoring upgrade programme.
- First DFPB published and enforced: domestic consumers begin receiving fuel at cost-plus pricing for all output from Pembroke and Fawley civic refineries; Humber and Stanlow on transitional pricing pending acquisition.

- First Civic Dividend paid: CRF accumulates sufficient revenue in first year to pay first Civic Dividend; payment mechanism established through existing tax system; every resident receives initial payment.
- Civic Charging Infrastructure Authority established: first 500 rapid DC charging hubs installed on all motorway services and major A-roads; contract with all local civic assemblies for town-centre charger installation.
- ASEA second session: reviews Year 1 data; sets 2027 extraction quota; approves DFPB for 2028; commissions EV adoption progress report.

## 16.3 Year 3 (2028): Humber Acquisition & Grid Investment Begin

- Complete Humber acquisition: Phillips 66 compensation paid; Humber Civic Refinery operational; anode coke expansion programme begins; CCS feasibility study commissioned.
- Compulsory acquisition notice served on Essar for Stanlow: valuation process begins. Note: Stanlow is in financial difficulty (Essar Group historically debt-laden); civic acquisition may be accelerated by insolvency proceedings.
- Grid Transition Fund deployment begins: first £3 billion tranche deployed to National Grid reinforcement programme; smart meter rollout accelerated; demand-management programme launched.
- Heat pump subsidy programme launches: £5,000 per-household subsidy for all households with gas boilers replacing to heat pumps; free installation for households in energy poverty; target 300,000 replacements in Year 3.
- SMR planning: planning applications submitted for Tranche 1 SMR sites (Wylfa, Oldbury); CRA commissions technical review of Rolls-Royce SMR design (preferred DD&SA SMR type).
- Charging: CCIA achieves 2,000 rapid charger installations; every motorway service area covered; 500 town centre locations operational.

## 16.4 Years 4-5 (2029-2030): East Coast Refinery & Scotland Fuel Security

- Stanlow acquisition complete: all four original civic target refineries (Pembroke, Fawley, Humber, Stanlow) now under CRA ownership; complete DFPB coverage of domestic fuel production.
- East Coast Civic Refinery (Grangemouth): first process train commissioned (40,000 b/d); Scotland begins domestic refining for first time since April 2025; North Sea crude to Scottish refinery by Forties Pipeline System.
- Strategic reserve reaches 60 days: salt cavern storage in Cheshire and Yorkshire operational; Milford Haven LNG terminal under NPSA lease; strategic reserve up from 30 days to 60 days.
- EV milestone: 50% of new vehicle sales are electric by 2030 (ASEA-mandated milestone); if milestone is not met, CRF increases charger deployment funding by 30% in following year.
- Gas boiler ban: no new gas boilers installed in any new residential or commercial building from 2030; gas connections to new developments prohibited.

## 16.5 Years 6-10 (2031-2036): Full Programme Maturity

- East Coast Civic Refinery at full 120,000 b/d capacity (2031).
- North Scotland Civic Refinery commissioned at Nigg Bay: 80,000 b/d operational (2032); Scotland achieves 100%+ domestic fuel self-sufficiency.
- 100% new vehicle sales are EV (2035 milestone): if achieved, annual extraction quota reduced by 5% from upper bound of corridor in following year.
- Strategic reserve reaches 90 days (2032).
- First SMR Tranche (Wylfa, Oldbury) operational (2031-2033): 940 MW dispatchable nuclear; first gas CCGT stations retirement announced.
- Gas boiler replacement: 25% of existing residential gas boilers replaced by 2035; social housing sector gas-free.
- CRF balance exceeds £47 billion (2035): sufficient to fund the full remaining infrastructure programme without any additional borrowing.

## Chapter 17 — 20-Year Plan (2036-2056): Deep Transition

The second decade of the framework marks the period in which the energy transition becomes structurally irreversible. By 2040, the majority of new vehicle sales have been electric for five years; EV fleet share exceeds 60%; grid reinforcement is substantially complete; and the first CCGT stations have been retired. The primary challenges of this period are: managing the declining revenue envelope as production falls; completing the residential gas phase-out; and executing the industrial transition.

### 17.1 The Declining Revenue Management Challenge

CRF annual revenues fall from £7.5 billion in 2035 to £4.3 billion in 2045 as production falls through the corridor. This is not a crisis; it is the design of the framework. The following mechanisms manage the transition:

- Capital programme front-loading: the most expensive infrastructure investments (refineries, SMRs, grid reinforcement) are concentrated in 2026-2035 when CRF revenues are highest. By 2035, the major capital commitments are largely complete and the CRF shifts from capital deployment to revenue accumulation.
- SMR generation revenue: by 2040, the first SMR fleet is generating approximately £2-3 billion per year in electricity sales revenue, supplementing the declining CRF hydrocarbon revenue stream.
- Offshore wind portfolio: the CRF's 40% stake in civic offshore wind projects (as majority partner in Wind Farm Civic Companies) generates growing revenue through the 2030s and 2040s as more capacity comes online.
- Civic Dividend tapering: the Civic Dividend falls proportionally with CRF revenues but is supplemented by the SMR and offshore wind revenue streams; residents continue to receive a resource/infrastructure dividend through the transition.

## 17.2 Industrial Transition Programme (2036-2056)

The Industrial Transition Fund (10% of CRF annual revenues) finances the electrification of industrial processes that currently use gas. This is the most technically complex element of the gas phase-out programme.

Industrial Sector	Transition Pathway & Timeline
<b>Steel (blast furnace)</b>	Electric arc furnace transition for all new capacity from 2032; all blast furnaces converted or retired by 2045. Civic anode coke from Humber for EV battery sector maintains refinery viability.
<b>Cement (process heat)</b>	Electro-calcination and plasma heating pilot 2030; first commercial scale 2036; full sector conversion by 2048. CRF Industrial Transition Fund: £200m committed.
<b>Chemicals (process heat)</b>	Industrial heat pumps (up to 200°C) for low-temperature applications from 2028; high-temperature applications via green hydrogen from 2035; sector conversion 90% complete by 2050.
<b>Glass manufacturing</b>	Electric furnace conversion; full sector transition by 2045. Industrial Transition Fund: £120m committed.
<b>Food processing</b>	Low-temperature process heat via industrial heat pumps; full transition by 2040. Industrial Transition Fund: £80m committed.
<b>Fertiliser production (Haber-Bosch)</b>	Green hydrogen replacement for fossil hydrogen in ammonia synthesis; first green ammonia plant 2032; full transition by 2045. Strategic importance for food security.
<b>Refineries (own energy use)</b>	All five civic refineries powered by renewable electricity and green hydrogen by 2038; zero fossil fuel use in refinery operations except as process input.

## Chapter 18 – 50-Year Plan (2026-2076): The Long Arc

The 50-year plan is not a document of detailed projections but a statement of constitutional intent. It establishes the trajectory from a hydrocarbon-dependent economy to a permanently electrified, solar- and nuclear-powered Civic Commonwealth, with a sovereign wealth fund accumulated from the depleting hydrocarbon resource that provides permanent civic revenues.

### THE 50-YEAR ARC OF THE DD&SA ENERGY TRANSITION

#### 2026-2030: SOVEREIGNTY TRANSITION

Civic acquisition of refineries and pipelines  
 DFPB operational; CRF accumulating  
 First ASEA; first Civic Dividend  
 North Sea: ~390 MMboe/yr (upper end of corridor)  
 Electricity grid: still fossil-gas dependent (35%)  
 Transport: 5-15% electric fleet

#### 2031-2040: MANAGED TRANSITION

All civic refineries operational  
 EV fleet reaches 60%; new vehicle sales 100% EV by 2035  
 Gas boilers banned in new builds; heat pump programme live

North Sea: ~280 MMboe/yr (midpoint corridor)  
 Electricity grid: nuclear (SMR Tranches 1-3) + renewables 70%  
 Transport: 40-60% electric fleet  
 CRF balance: ~£70 billion

#### 2041-2050: DEEP TRANSITION

EV fleet 85-97%; ICE vehicles become rare on roads  
 All residential gas boilers replaced  
 Industrial gas phase-out well advanced  
 North Sea: ~150-200 MMboe/yr (declining)  
 Electricity grid: 90%+ zero-carbon; gas <5% (backup only)  
 Heating: <10% gas; majority heat pumps/district heat  
 CRF balance: ~£86 billion

#### 2051-2060: TRANSPORT ELECTRIFICATION COMPLETE

Virtually all road vehicles electric or hydrogen  
 Aviation on SAF blend; hydrogen aviation trials  
 North Sea: ~75-100 MMboe/yr (feedstock dominant)  
 Electricity grid: 95%+ zero-carbon  
 Gas: residential and commercial networks decommissioned

#### 2061-2070: GAS OBSOLESCENCE

Gas grid decommissioned (except strategic backup nodes)  
 Industrial hydrogen replaces all remaining gas process use  
 North Sea: <50 MMboe/yr (feedstocks only)  
 Electricity grid: essentially 100% zero-carbon

#### 2071-2076 AND BEYOND: THE CIVIC COMMONWEALTH ENDOWMENT STATE

No fossil fuel combustion in transport or heating  
 Hydrocarbons: pharmaceuticals, materials, speciality chemicals only  
 CRF: ~£87 billion balance generating ~£4.0bn/year perpetually  
 SMR fleet: 9.4 GW providing cheap, abundant, civic electricity  
 Offshore wind: 30-50 GW civic portfolio  
 Civic Dividend: funded permanently by investment returns  
 The depleting geological resource has been converted into  
 a permanent, diversified civic endowment.

This is what energy sovereignty means in practice.

## Chapter 19 — Risk Analysis & Contingency Planning

### 19.1 Risk Matrix

Risk	Likelihood	Severity	Mitigation
<b>Refinery operator legal challenge to compulsory acquisition</b>	High (near-certain)	Moderate (delays, not blockage)	NRS Act is constitutionally grounded; compensation mechanism is fair and legally robust; Constitutional Court fast-track review; operations continue under interim CRA management during legal process.
<b>North Sea production decline faster than modelled (geological depletion acceleration)</b>	Medium	High	Depletion corridor lower bound is the floor; if production falls below lower bound, ASEA approves accelerated EV transition funding; gas phase-out accelerated; imports supplemented at DFPB-equivalent price from Norway/Algeria strategic agreements.

Risk	Likelihood	Severity	Mitigation
<b>EV adoption slower than projected (technology or affordability)</b>	Medium	Moderate	CRF increases EV infrastructure funding; CRA extends extraction quota toward upper bound of corridor temporarily; ASEA reviews and authorises; societal transition support payments from Industrial Transition Fund.
<b>International legal challenge (WTO, ECHR, bilateral investment treaties)</b>	Medium	Moderate-High	NRS Act is designed for compatibility with UK treaty obligations. Compensation mechanism is fair-value. DD&SA legal team engaged from Day 1. Sovereign constitutional authority of Civic Commonwealth is primary defence.
<b>North Sea industrial accident (major oil spill)</b>	Low	Very High	CRA environmental liability protocol; compulsory insurance; CRF environmental reserve; international response agreement with Norway; moratorium on extraction in affected area until clean-up complete.
<b>Grid failure during transition period (dependence on gas declining before renewables fully online)</b>	Medium (2032-2040 gap period)	High	SMR Tranche 1 and 2 online by 2034 bridge the gap; gas peaking plants maintained on hot standby through 2045; LNG strategic reserve; demand response programme; interconnector capacity with Nordic grid increased.
<b>Sovereign CRF mismanagement or political interference</b>	Low (design prevents it)	Very High	Anti-capture architecture in NRS Act; independent Fund Council; sortition governance; full transparency; Constitutional Court oversight; no ministerial direction powers over CRF; CEW independent complaint mechanism.
<b>Geopolitical disruption to imported crude (bridging period pre-full civic fleet)</b>	Medium	High	90-120 day strategic reserve prevents short-term disruption; domestic production maintained at corridor upper bound during crisis; ASEA emergency session authority; North Sea fields provide 55%+ of domestic supply from Day 1.

## Chapter 20 – Monitoring, Evaluation & Resident Communication

### 20.1 Key Performance Indicators

KPI	Target	Measurement Frequency	Reporting Body
<b>Annual extraction rate (MMboe)</b>	Within Constitutional Depletion Corridor	Monthly (NSTA/CRA data)	CRA; ASEA annual review
<b>Domestic supply obligation compliance</b>	100% of licensees delivering ≥60% to civic refineries	Monthly per licensee	CRA Compliance Division
<b>Civic refinery operational availability</b>	>95% for each civic refinery	Monthly	CRA Operations Directorate

KPI	Target	Measurement Frequency	Reporting Body
<b>DFPB vs international price differential</b>	DFPB ≤35% below Brent equivalent pump price	Monthly	ASEA published data; CEW monitoring
<b>CRF balance</b>	Above 10% of remaining reserve value floor (NRS Act Clause 28)	Quarterly	CRF Fund Council; published
<b>Civic Dividend payment</b>	Paid annually to every resident without delay	Annual	CRF Fund Council; Civic Dividend Portal
<b>EV fleet share</b>	Meets 5-year milestone targets per Schedule 3	Annual (DVLA data)	CCIA; ASEA review
<b>EV charger coverage</b>	100% of A-road coverage; 100% of communities >500 by 2032	Quarterly	CCIA; published coverage map
<b>Residential gas boiler replacement rate</b>	Meets phase-out schedule targets	Annual (Energy Performance Certificate data)	ASEA; Housing Civic Assembly
<b>Strategic fuel reserve level</b>	≥60 days by 2030; ≥90 days by 2032; ≥120 days by 2035	Monthly	NPSA; CRA strategic reserve report
<b>CO2 emissions from energy sector</b>	Year-on-year reduction consistent with net-zero trajectory	Annual (DESNZ data)	Environmental Integrity Commission
<b>CRF anti-capture compliance</b>	Zero revolving-door violations; zero lobbying violations	Continuous	Civic Energy Watchdog; Constitutional Court

## 20.2 Resident Communication Strategy

The DD&SA Energy Sovereignty Framework derives its democratic legitimacy from informed resident understanding and ongoing sortition-based deliberation. Residents are not passive recipients of energy policy; they are the beneficial owners of the resource system and the constitution mandates they be treated as such. The communication strategy reflects this.

Communication Instrument	Description & Frequency
<b>Annual ASEA Public Report</b>	The ASEA publishes a plain-language annual report within 60 days of its plenary session: what extraction quota was set, why, what the CRF balance is, what the Civic Dividend will be, what the transition milestones are showing. Distributed to every household; published online; read by sortition-selected public summary panel.
<b>Monthly CRA Data Dashboard</b>	Live public dashboard showing: current production rate vs corridor; DFPB vs international prices; refinery availability; strategic reserve level; CRF balance. No commercial confidentiality on public resource data.
<b>Annual Civic Dividend Statement</b>	Every resident receives an annual statement showing: their Civic Dividend payment; what the CRF balance is; how much of the total hydrocarbon

Communication Instrument	Description & Frequency
<b>ASEA Deliberation Live Stream</b>	<p>resource has been extracted to date; how much remains; what their share's estimated lifetime value is.</p> <p>All ASEA plenary sessions are live-streamed and archived. Sortition members' deliberations are public. Technical panel presentations are public. The sovereign energy decisions of the Civic Commonwealth are made in full public view.</p>
<b>School Curriculum Integration</b>  <b>Resident Petition Mechanism</b>	<p>Energy sovereignty, the carbon cycle, the depletion schedule, and the transition timeline are part of the DD&amp;SA Civic Education curriculum from Year 7 onwards. Residents grow up understanding what their resource inheritance is and how the Civic Commonwealth manages it on their behalf.</p> <p>Any resident may initiate a petition for ASEA extraordinary session consideration on any energy matter, subject to 100,000 supporting signatures. The mechanism is a direct expression of resident ownership over the energy system.</p>

# Appendix A – Legislative Cross-Reference Index

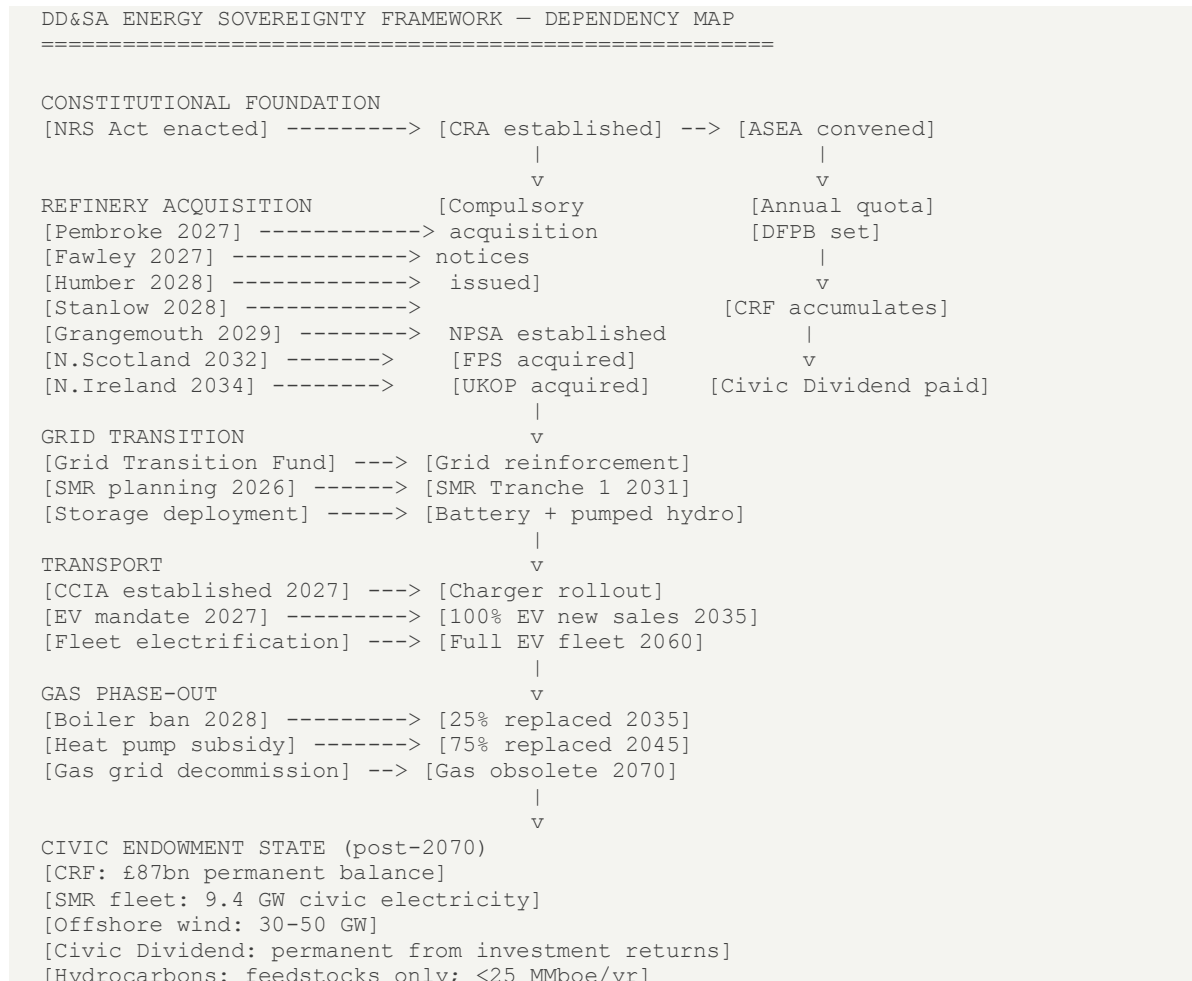
The following table maps each major policy instrument in the DD&SA Energy Sovereignty Framework to its legislative basis, responsible body, and implementation timeline.

Policy Instrument	Legislative Basis	Responsible Body	Implementation Year
<b>Natural Resource Sovereignty Act</b>	Primary legislation (DDSA-LEG-NRS-001)	Civic Commonwealth Legislature	2026
<b>Civic Resource Authority establishment</b>	NRS Act Part II, Clause 5-9	CRA	2026
<b>Annual Sortition Energy Assembly</b>	NRS Act Part III, Clause 10-14	ASEA	2026
<b>Constitutional Depletion Corridor</b>	NRS Act Part V, Schedule 1	ASEA/CRA	2026
<b>Domestic Fuel Price Benchmark</b>	NRS Act Part III, Schedule 2	ASEA (annual)	2027
<b>Civic Resource Fund</b>	NRS Act Part VI, Clause 24-28	CRF Fund Council	2026
<b>Compulsory refinery acquisitions</b>	NRS Act Part IV, Clause 15-19; Compulsory Purchase (Energy Assets) Regulations	CRA; Constitutional Court	2027-2034
<b>National Pipeline &amp; Storage Authority</b>	NPSA Establishment Order under NRS Act	NPSA Board	2027
<b>Civic Charging Infrastructure Authority</b>	CCIA Establishment Order	CCIA Board	2027
<b>Gas boiler ban (new builds)</b>	Building Regulations (Civic Commonwealth) Amendment 2028	Building Standards Assembly	2028
<b>Gas boiler replacement programme</b>	Civic Heating Transition Act 2028	CRF Industrial Transition Fund	2028
<b>EV mandate (new vehicle sales)</b>	Road Vehicles (Zero Emission) (Civic Commonwealth) Regulations	DVLA Civic equivalent; ASEA target	2027-2035
<b>Gas grid decommissioning</b>	Gas Networks (Decommissioning Schedule) Act	NPSA; Gas Distribution Assemblies	2045-2065
<b>Anti-capture provisions</b>	NRS Act Part VII; Anti-Corruption Framework (DDSA-GOV-ACC-001)	Civic Energy Watchdog; Constitutional Court	2026

## Appendix B – Glossary of Technical & Legal Terms

Term	Definition
<b>2P Reserves</b>	Proven and Probable reserves: the central estimate of commercially recoverable oil and gas from fields in production or under development. NSTA end-2024: 2.9 billion boe.
<b>2C Resources</b>	Contingent resources: oil and gas estimated to be recoverable from known deposits but not yet commercially developed. NSTA end-2024: 6.2 billion boe.
<b>ASEA</b>	Annual Sortition Energy Assembly: the 300-member sortition body with sovereign authority over annual extraction quotas, the Domestic Fuel Price Benchmark, and transition milestone oversight.
<b>Boe / MMboe</b>	Barrels of oil equivalent / Million barrels of oil equivalent: standard measure converting gas volumes to oil-energy-equivalent for comparison.
<b>CRA</b>	Civic Resource Authority: the constitutional licensing, operational, and regulatory body for all natural resource extraction and civic refinery operations.
<b>CRF</b>	Civic Resource Fund: the sovereign wealth accumulation vehicle for all revenues from extraction, refining, and the Civic Resource Levy.
<b>Constitutional Depletion Corridor</b>	The legally binding production range (upper and lower bounds) for each period from 2026 to post-2070, embedded in the Natural Resource Sovereignty Act Schedule 1.
<b>DFPB</b>	Domestic Fuel Price Benchmark: the cost-plus pricing formula that replaces Brent-linked pricing for all civically produced and refined fuels sold to domestic consumers.
<b>CCIA</b>	Civic Charging Infrastructure Authority: the civic body responsible for planning, building, and operating the national public EV charging network.
<b>FPS</b>	Forties Pipeline System: the primary North Sea crude oil transport pipeline serving approximately 200 fields; acquired by NPSA under the NRS Act.
<b>Green hydrogen</b>	Hydrogen produced by electrolysis of water using renewable or nuclear electricity; zero-carbon; used to replace fossil gas in industrial processes and as a long-duration energy store.
<b>ICE</b>	Internal Combustion Engine: a vehicle engine powered by petrol or diesel combustion. To be phased out from new vehicle sales by 2035.
<b>NPSA</b>	National Pipeline & Storage Authority: the civic body owning and operating all strategic pipeline and storage infrastructure.
<b>NRS Act</b>	Natural Resource Sovereignty Act (DDSA-LEG-NRS-001): the primary legislation establishing resident ownership of natural resources and the governance architecture of the DD&SA Energy Sovereignty Framework.
<b>SAF</b>	Sustainable Aviation Fuel: aviation kerosene equivalent produced from biological waste feedstocks or synthetic processes; the primary replacement for fossil-derived jet fuel.
<b>SMR</b>	Small Modular Reactor: a nuclear fission reactor of 100-500 MW capacity, factory-assembled and site-installed; faster and cheaper to build than conventional large-scale nuclear; 9.4 GW fleet planned by 2042.
<b>UKCS</b>	UK Continental Shelf: the seabed and subsoil of the continental shelf adjacent to the United Kingdom, within which the Crown (and under the NRS Act, residents of the Civic Commonwealth) holds exclusive extractive rights.

# Appendix C – Dependency Map



End of DDSA-ENERGY-001 · 2026