# **Doc 7A — Report: Structure & Fixed Content**

**Purpose.** Fix the **sections, fields, precision, and data sources** so every report is identical given the same inputs.  
 **Sources.** Only read: **Result**, optional **FrontierMap**, and **RunRecord** (Doc 1). Parameter names shown come from the **ParameterSet** snapshot that is embedded via those objects.  
 **Precision.** All percentages shown to **one decimal place**. Internals follow Doc 4 rounding; **presentation rounding happens once here**.  
 **Approval gate denominator (fixed).** When ballot\_type = **approval**, the **national support %** for gates is the **approval rate**:  
 approvals\_for\_change / valid\_ballots (not share of approvals). This sentence must appear in §3.

## **Section order (must appear exactly in this order)**

### **1) Cover & Snapshot**

**What to show (single-page header + snapshot box):**

* Title, jurisdiction name, date.
* **Outcome label**: “Decisive / Marginal / Invalid”.
* **Snapshot box (left→right):**
  + **Ballot:** VM-VAR-001
  + **Allocation:** VM-VAR-010 (and Unit.magnitude or policy)
  + **Weighting:** VM-VAR-030
  + **Thresholds:** quorum VM-VAR-020; national VM-VAR-022; regional VM-VAR-023 (if double-majority on)
  + **Double-majority:** VM-VAR-024 on/off · **Symmetry:** VM-VAR-025 on/off
  + **Frontier mode:** VM-VAR-040 (if any)

**Data mapping:**

* Outcome label → Result.label.
* All VM-VAR values → ParameterSet snapshot (via Result/RunRecord linkage).
* Jurisdiction/date → DivisionRegistry.name/version and RunRecord.timestamp.

### **2) Eligibility & Rolls (Who could vote)**

**What to show (2–4 sentences + a small table):**

* **Roll inclusion policy** (verbatim): VM-VAR-028.
* Registry **roll provenance**: DivisionRegistry.provenance {source, published\_date}.
* Totals: Σ eligible\_roll and Σ ballots\_cast at country level.
* Note the per-unit quorum if VM-VAR-021 > 0 (and whether scope is frontier\_only or frontier\_and\_family if set).

**Data mapping:**

* Policy → VM-VAR-028.
* Provenance → DivisionRegistry.provenance.
* Totals → sum of Result.UnitBlock.turnout fields.
* Per-unit quorum note → VM-VAR-021 and (optional) VM-VAR-021\_scope.

### **3) How Votes Were Counted (Ballot)**

**What to show (method paragraph):**

* State ballot type plain-English rules (plurality / approval / score / ranked IRV / ranked Condorcet).
* If **score**: print scale [VM-VAR-002..003] and note normalization VM-VAR-004.
* If **ranked IRV**: note exhaustion policy = **reduce continuing denominator**.
* If **ranked Condorcet**: note completion rule VM-VAR-005.
* **Mandatory sentence for approval ballots:** “For legitimacy gates, the support % is the **approval rate** = approvals for the Change option divided by **valid ballots**.”

**Data mapping:**

* Methods & parameters → ParameterSet.
* Turnout denominators (valid vs include blanks) → VM-VAR-007 (state if on).

### **4) How Seats/Power Were Allocated (Inside Units)**

**What to show:**

* Allocation method VM-VAR-010.
* If proportional: PR entry threshold VM-VAR-012.
* If **MMP**: top-up share VM-VAR-013, target basis VM-VAR-015, correction level VM-VAR-016, total seats model VM-VAR-017, overhang policy VM-VAR-014.

**Data mapping:**

* All from ParameterSet; unit magnitudes from DivisionRegistry (summarize as “m=… where applicable”).

### **5) How Results Were Aggregated (Hierarchy & Weighting)**

**What to show:**

* Weighting method VM-VAR-030; if population\_baseline, cite “registry baseline year(s)”.
* Aggregate level is **country** (VM-VAR-031, v1 fixed).

**Data mapping:**

* Method → ParameterSet.
* Baseline year → Unit.population\_baseline\_year (state the range or the common year).
* Aggregates used → Result.Aggregates.

### **6) Legitimacy Panel (Decision Gates)**

**Layout:** four lines with badges (✅/❌).

* **Quorum:** Turnout [X.X%] vs quorum [Y%] — Pass/Fail.  
  + If per-unit quorum set, show “Per-unit quorum applied; [N] units below threshold.”
* **Majority/Supermajority:** Support [X.X%] vs [Y%] — Pass/Fail.
* **Double-majority:** if on: National [X.X%] & affected regions [min: Z.Z%] vs [Y%] — Pass/Fail (and state how family was defined).
* **Symmetry:** Applied or Not respected: <summary from VM-VAR-029>.

**Data mapping:**

* Values & pass/fail → Result.gates section (LegitimacyReport copy).
* Affected-family method → VM-VAR-026/027; enforce “by\_list/by\_tag” mention if frontier\_mode=none.

### **7) Outcome**

**What to show:**

* **Council/Power-sharing:** a table of seats/power by Option (integers for seats; share if power).
* **Executive (if enabled):** “Executive winner: ; margin [M.pp] of continuing ballots (IRV) or per Condorcet rule.”
* **Label line:** “Result label: Decisive / Marginal / Invalid — .”

**Data mapping:**

* Seats/power → Result.UnitBlocks (rolled) or Result.Aggregates at country level.
* Executive winner/margin → IRV RoundLog or Condorcet outcome tracked in Result audit.
* Label & reason → Result.label, Result.label\_reason.

### **8) Frontier / Autonomy (if produced)**

**What to show (map + paragraph):**

* Map legend: actions (no change / autonomy(AP:Name) / phased change / immediate change).
* One paragraph: counts of mediation zones, enclaves, protected overrides; contiguity basis (VM-VAR-047) and island rule (VM-VAR-048).
* If per-unit quorum blocked status changes, state the count.

**Data mapping:**

* Map/status → **FrontierMap** per-unit status, band\_met.
* Diagnostics → FrontierMap flags and summary counters; also mirror Result.UnitBlock.mediation\_flagged / protected\_override\_used.

### **9) Sensitivity (Flip Points)**

**What to show:**

* 2×3 mini-table: outcome under **±1 pp** and **±5 pp** threshold tweaks (national, regional, cutoff).
* If unavailable (CompareScenarios not run), print **“N/A (not executed)”**.

**Data mapping:**

* From **CompareScenarios** output (VM-FUN-013) linked to the baseline **Result** ID(s).

### **10) Integrity & Reproducibility**

**What to show (bulleted identifiers):**

* **Formula ID**, **Engine Version**, **Division Registry ID**, **Parameter Set ID**, **BallotTally ID/label**, **RNG seed** (if used), **Run timestamp (UTC)**, **Results ID**, optional **FrontierMap ID**.
* One sentence: “Anyone can reproduce this result locally using these inputs.”

**Data mapping:**

* All from **RunRecord**; Results ID and optional FrontierMap ID from pointers inside **RunRecord**.

## **Fixed footer (every page)**

Formula ID · Engine Version · Division Registry · Parameter Set · BallotTally Label · Run Timestamp · Results ID

**Data mapping:** footer values are taken **verbatim** from **RunRecord** and Result.id; the BallotTally label comes from BallotTally.label referenced by **RunRecord**.

## **Rendering rules (non-negotiable)**

* **Precision:** show percentages with **one decimal**; margins in **pp** with one decimal; seats as integers.
* **No external assets:** all fonts/styles bundled (Doc 3).
* **Internationalization:** if bilingual, render full mirrored PDFs; do not mix languages within paragraphs.

## **Checklist (data-backed, no extras)**

* Section order as above.
* **roll\_inclusion\_policy** and provenance printed in §2.
* Approval gate denominator sentence in §3.
* Panel values come from Result.gates; affected-family method stated.
* Outcome, Frontier, Sensitivity mapped only to produced artifacts (Result/FrontierMap/CompareScenarios).
* Footer identifiers present and sourced from **RunRecord/Result**.

**Status:** Report structure & fixed content are final and fully backed by pipeline outputs.

# **Doc 7B — Report: Templates, Visuals & Fallbacks**

**Purpose.** Lock the exact wording blocks, icon/color rules, map patterns, accessibility, bilingual handling, and error fallbacks.  
 **Style.** Neutral, factual. One-decimal percentages. No analytics beyond pipeline outputs (Docs 5/7A).  
 **Inputs.** Everything shown must come from Result, optional FrontierMap, RunRecord, and (if executed) CompareScenarios.

## **1) Verbatim wording blocks (fill the [brackets] exactly)**

### **1.1 Quorum**

**Pass**

Turnout was **[X.X%]**, meeting the **[Y%]** quorum — **Pass**.

**Fail**

Turnout was **[X.X%]**, below the **[Y%]** quorum — **Fail**. The outcome is **Invalid**.

### **1.2 Majority / Supermajority**

**Pass**

Support for **[Option/Change]** was **[X.X%]**, meeting the **[Y%]** threshold — **Pass**.

**Fail**

Support for **[Option/Change]** was **[X.X%]**, below the **[Y%]** threshold — **Fail**. The outcome is **Invalid**.

### **1.3 Double-majority**

**Pass**

National support **[X.X%]** and affected-regions support **[min: Z.Z%]** both met **[Y%]** — **Pass**.

**Fail**

Although national support was **[X.X%]**, the affected-regions requirement **[Y%]** was not met (**[lowest region: Z.Z%]**) — **Fail**. The outcome is **Invalid**.

*(If family is by\_list/by\_tag, append once: “Affected-regions were defined* ***[by list/by tag]****.”)*

### **1.4 Symmetry**

**Respected**

The same thresholds apply to all directions of change — **Respected**.

**Not respected (with exceptions)**

The same thresholds do not apply everywhere — **Not respected**: **[summary of symmetry\_exceptions]**.

### **1.5 Ties**

**Status quo policy**

A tie occurred **([context])**. By policy, **Status Quo prevails**.

**Deterministic order**

A tie occurred **([context])**. It was resolved by the predeclared ordering: **[A over B]**.

**Random (seeded)**

A tie occurred **([context])**. It was resolved by **random draw** with seed **[####]**.

### **1.6 Frontier summary**

Units meeting **[rule, e.g., ≥T% or band name]** changed status. **[N]** mediation zones and **[K]** enclaves were flagged under the contiguity policy **[land/bridge/water as allowed]**. **[P]** protected units **[changed with override / were unaffected]**.

### **1.7 Result label**

Result label: **[Decisive / Marginal / Invalid]** (**[reason]**).

## **2) Visual rules (fixed)**

### **2.1 Colors (color-blind safe mapping)**

* **Status Quo:** grey
* **A:** blue **B:** orange **C:** green **D:** purple
* **Autonomy bands:** neutral hues with **hatching** (not saturated reds).
* Do not invent new colors; if more than four Options, reuse sequence cyclically with lighter tint.

### **2.2 Icons**

* ✅ **Pass**, ❌ **Fail**, ⚠ **Marginal note** (Legitimacy Panel and callouts only).

### **2.3 Charts**

* Bars only (no 3D, no gradients).
* One chart per figure.
* Percent labels shown to **one decimal**.

### **2.4 Maps**

* Solid fills for statuses.
* **Mediation zones:** diagonal stripes overlay.
* **Enclaves:** dotted overlay.
* Black borders for Units; thin white stroke between Units for legibility.
* Legend must list: *no change*, *phased change*, *immediate change*, *autonomy(AP:Name)*.

### **2.5 Tables**

* Headers include **units**: “%”, “pp”, “seats”.
* Right-align numbers; one decimal for percentages and margins.

## **3) Accessibility & bilingual handling**

* **Fonts & contrast:** body ≥ 10.5pt; high-contrast text/icons; do not encode meaning in color alone.
* **Alt text:** every chart/map has an alt sentence (“Seats by option at country level…”, “Map: mediation zones hatched…”).
* **Keyboard order:** logical reading order (title → snapshot → sections).
* **Bilingual:** produce **mirrored full documents** per language; do not mix languages in a paragraph. Keep numbers/IDs identical across languages.
* **Numerals:** show dot-decimal internally; localized decimal in PDFs/HTML is allowed **only for display** and must not change stored values.

## **4) Sensitivity section rule**

* Render the 2×3 **±1pp / ±5pp** table **only if** CompareScenarios (VM-FUN-013) artifacts are present.
* Otherwise print a single line:  
    
    
   Sensitivity: **N/A (not executed)**.

## **5) Error and fallback behaviors**

### **5.1 Validation failed (before counting)**

* Show Sections: **Cover & Snapshot**, **Eligibility**, **Ballot** (method statement), then a box:  
    
    
   **Why this run is invalid:** [bullet list of validation issues].
* **Legitimacy Panel:** “N/A” for values; show ❌ Invalid.
* **Outcome:** “Invalid (validation failed).”
* **Frontier:** **omit**.
* **Integrity:** still show identifiers from RunRecord.

### **5.2 Gates failed**

* Render full report up to **Legitimacy Panel** with ❌ where applicable.
* **Outcome:** “Invalid (gate failed: [quorum/majority/double-majority/symmetry]).”
* **Frontier:** **omit**.
* Sensitivity may still be shown if scenarios were executed.

### **5.3 Mediation / protected impacts**

* If **any** mediation/enclave/protected-override flags exist, add a ⚠ callout under **Outcome**:  
    
    
   Frontier diagnostics: **[N]** mediation zones, **[K]** enclaves, **[P]** protected overrides.
* This condition alone changes the label to **Marginal** per Doc 4C.

## **6) Data binding (where the words/numbers come from)**

* **Quorum/majority/double-majority/symmetry lines:** Result.gates (values + Pass/Fail).
* **Approval denominator sentence:** included verbatim in §3; denominator = **valid ballots** (Doc 4A).
* **Frontier counts & flags:** FrontierMap + Result.UnitBlock.mediation\_flagged / protected\_override\_used.
* **Label & reason:** Result.label, Result.label\_reason.
* **Sensitivity table:** CompareScenarios bundle linked to the baseline Result.id.
* **Footer identifiers:** RunRecord + Result.id + BallotTally.label.

## **7) Do / Don’t**

* **Do** use exactly these templates and icons; keep one decimal; state methods and denominators plainly.
* **Don’t** add commentary, forecasts, polling, demographic analysis, or unproduced metrics; don’t round twice; don’t change icon meanings.

**Status:** Templates, visuals, accessibility, bilingual handling, sensitivity rule, and error fallbacks are locked.