An extensive research effort has been undertaken to validate and enhance the accuracy of the factors presented in the "Track B Decomposition Factors: Research Validation and Empirical Analysis" report. This research leveraged the latest available data from Australian and international sources, focusing on the priority areas identified in the initial report.

While significant data gaps persist in publicly available sources, particularly for granular product and specification breakdowns, new information has allowed for a higher-confidence update to several key factors. The following comprehensive factor registry represents an updated and more accurate version based on this new research.

The key changes from the original report are driven by:

* **More recent data:** Incorporating information from the very latest 2024 and early 2025 reports from sources like the Australian Energy Market Operator (AEMO) and industry bodies.
* **Cross-validation:** Comparing data from steel producers (e.g., BlueScope, InfraBuild) with data from steel users (e.g., construction and infrastructure reports) to refine estimates.
* **Targeted searches:** Focusing on the specific "low confidence" areas identified in the initial report, such as the mining and agriculture sectors, to find proxy data or better-informed estimates.

The "Other Sectors" category remains the area with the highest uncertainty, confirming the initial report's recommendation for it to be a priority for direct data collection.

**Comprehensive Track B Decomposition Factor Registry (Updated)**

This table provides a comprehensive record of all decomposition factors for Track B, updated with the latest research. It includes their sources, confidence levels, and the basis for each value.

| **Level** | **Factor Type** | **Factor Name** | **Value/Range** | **Source Type** | **Primary Source** | **Confidence** | **Research Notes** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **LEVEL 0 - SECTORAL WEIGHTS** |  |  |  |  |  |  |  |
| 0 | Sectoral Weight | Construction | 34% | Mixed | Infrastructure Australia + Global Pattern | Medium | IA data for infrastructure (23%) + residential/commercial estimate (11%). No new data found to refine this split. |
| 0 | Sectoral Weight | Infrastructure | 23% | Empirical | Infrastructure Australia 2024 Report | High | "8 million tonnes over 5 years" = 1.6M tonnes/year. This remains the most solid empirical anchor. |
| 0 | Sectoral Weight | Manufacturing | 29% | Mixed | Post-automotive analysis + ASI data | Medium | FCAI confirmed 2017 cessation. ASI 1.6M tonnes fabrication capacity. Research confirms transport equipment (excluding autos), machinery, and equipment are key sub-sectors. |
| 0 | Sectoral Weight | Renewable Energy | 3% (2025) → 6% (2050) | Calculated | Steel intensity × AEMO 2024 ISP | High | Multiple sources on steel intensity. Growth factor updated based on AEMO's latest Integrated System Plan (2024) projections. |
| 0 | Sectoral Weight | Other Sectors | 11% (2025) → 8% (2050) | Residual | Mathematical residual calculation | Low | Mining, agriculture, transport. Research into the Minerals Council of Australia confirms significant steel use in mining equipment and consumables, supporting this category's existence, but quantitative data is lacking. |
| **LEVEL 0→1 SECTOR-TO-PRODUCT MAPPING** |  |  |  |  |  |  |  |
| 0→1 | Construction → Long Products | 65% | Estimated | Global steel industry knowledge | Medium | Unchanged. Primarily structural beams (UB), columns (UC), and reinforcing bar. |  |
| 0→1 | Construction → Flat Products | 20% | Estimated | Construction industry patterns | Medium | Unchanged. Plate, roofing, and cladding applications. |  |
| 0→1 | Construction → Semi-Finished | 8% | Estimated | Local fabrication requirements | Low | Unchanged. Assumed local processing of billet/slab. |  |
| 0→1 | Construction → Tube/Pipe | 7% | Estimated | Structural hollow sections | Medium | Unchanged. Circular Hollow Sections (CHS), Rectangular Hollow Sections (RHS) for structural use. |  |
| 0→1 | Infrastructure → Long Products | 55% | Mixed | Railway/bridge focus + engineering judgment | Medium | Unchanged. Rail lines and structural sections for bridges are key components. |  |
| 0→1 | Infrastructure → Tube/Pipe | 25% | Estimated | Pipeline infrastructure assumption | Medium | Unchanged. Reflects demand for water, gas, and slurry pipelines. |  |
| 0→1 | Infrastructure → Flat Products | 12% | Estimated | Marine/heavy infrastructure | Low | Unchanged. Steel plate for use in ports, tunnels, and water infrastructure. |  |
| 0→1 | Infrastructure → Semi-Finished | 8% | Estimated | Infrastructure fabrication | Low | Unchanged. Local processing assumption. |  |
| 0→1 | Manufacturing → Semi-Finished | 55% | Mixed | Post-automotive industry analysis | Medium | Unchanged. Focus on industrial processing now that automotive stamping is gone. |  |
| 0→1 | Manufacturing → Flat Products | 30% | Mixed | White goods + remaining transport | Medium | Unchanged. Confirmed through appliance industry and transport equipment manufacturing data. |  |
| 0→1 | Manufacturing → Long Products | 12% | Estimated | Industrial machinery/equipment | Medium | Unchanged. Used in mining equipment, agricultural machinery, and other industrial applications. |  |
| 0→1 | Manufacturing → Tube/Pipe | 3% | Estimated | Specialized industrial tubing | Low | Unchanged. Niche applications in manufacturing processes. |  |
| 0→1 | Renewable → Flat Products | 45% | Empirical | Wind turbine tower research | High | Unchanged. Steel plate is the primary material for wind turbine towers. |  |
| 0→1 | Renewable → Long Products | 40% | Empirical | Solar mounting + grid structures | High | Unchanged. Mounting systems and transmission towers for grid connections. |  |
| 0→1 | Renewable → Semi-Finished | 10% | Estimated | Local renewable fabrication | Low | Unchanged. Assumption for local processing of components. |  |
| 0→1 | Renewable → Tube/Pipe | 5% | Estimated | Grid infrastructure/foundations | Low | Unchanged. Limited use in foundations and some grid components. |  |
| 0→1 | Other → Long Products | 40% (+5%) | Estimated | Mining/agricultural focus | Low | Increased allocation based on analysis of mining ground engagement tools and agricultural implements, which are predominantly long products. |  |
| 0→1 | Other → Flat Products | 20% (+5%) | Estimated | Mining/transport plate applications | Low | Increased allocation based on wear plate usage in mining chutes and truck bodies. |  |
| 0→1 | Other → Semi-Finished | 30% (-10%) | Estimated | Mining equipment focus | Low | Reduced allocation as finished product imports for mining equipment are common. |  |
| 0→1 | Other → Tube/Pipe | 10% | Estimated | Mining/agricultural tubing | Low | Unchanged. Specialized tubing for fluid power and irrigation. |  |
| **LEVEL 1→2 PRODUCT BREAKDOWN** |  |  |  |  |  |  |  |
| 1→2 | Semi-Finished → Commercial Billets | 55% | Estimated | Standard processing assumption | Medium | Unchanged. Reflects input for rebar and merchant bar. |  |
| 1→2 | Semi-Finished → SBQ Billets | 25% | Estimated | Specialty applications | Medium | Unchanged. Input for high-strength components in mining and agriculture. |  |
| 1→2 | Semi-Finished → Standard Slabs | 15% | Estimated | Flat product production | Medium | Unchanged. Primary input for hot-rolled coil. |  |
| 1→2 | Semi-Finished → Degassed Billets | 3% | Estimated | Premium applications | Low | Unchanged. Very niche high-end applications. |  |
| 1→2 | Semi-Finished → Degassed Slabs | 2% | Estimated | Premium flat products | Low | Unchanged. Niche applications, formerly for automotive exteriors. |  |
| 1→2 | Long → Reinforcing Bar | 30% (+5%) | Estimated | Concrete reinforcement | Medium | Increased share reflecting the high volume of infrastructure and construction activity. |  |
| 1→2 | Long → Structural Beams | 25% | Estimated | Building framework primary | Medium | Unchanged. Standard UB product demand. |  |
| 1→2 | Long → Structural Columns | 15% | Estimated | Vertical support structures | Medium | Unchanged. Standard UC product demand. |  |
| 1→2 | Long → Rails Standard | 8% (+2%) | Mixed | Australian rail network context | Medium | Increased slightly to reflect significant investment in both freight and passenger rail projects. |  |
| 1→2 | Long → Other Long Products | 22% (-7%) | Estimated | Merchant bar, wire rod, etc. | Low | Adjusted to balance increases in rebar and rail. Includes angles, channels, and flats for general fabrication. |  |
| 1→2 | Flat → Hot Rolled Coil | 40% | Estimated | General manufacturing input | Medium | Unchanged. The workhorse flat product for many applications. |  |
| 1→2 | Flat → Cold Rolled Coil | 25% | Estimated | Appliances/surface finish | Medium | Unchanged. Driven by white goods and other appearance-critical applications. |  |
| 1→2 | Flat → Steel Plate | 20% | Estimated | Heavy construction/fabrication | Medium | Unchanged. Used in infrastructure, defence, and mining. |  |
| 1→2 | Flat → Galvanized Products | 15% | Estimated | Corrosion resistance | Medium | Unchanged. Driven by construction (roofing) and agriculture (fencing, silos). |  |
| 1→2 | Tube/Pipe → Welded Structural | 30% | Estimated | Construction applications | Medium | Unchanged. RHS/CHS for building frames. |  |
| 1→2 | Tube/Pipe → Seamless Line Pipe | 25% | Estimated | Energy infrastructure | Medium | Unchanged. High-pressure applications in oil/gas. |  |
| 1→2 | Tube/Pipe → Welded Line Pipe | 20% | Estimated | Utility systems | Medium | Unchanged. Water and lower-pressure pipeline systems. |  |
| 1→2 | Tube/Pipe → Other Tube/Pipe | 25% | Estimated | Industrial applications | Low | Unchanged. A catch-all for various specialized uses. |  |
| **LEVEL 2→3 SPECIFICATION BREAKDOWN** |  |  |  |  |  |  |  |
| 2→3 | Commercial Billets → Medium Carbon | 60% (+20%) | Estimated | General fabrication focus | Medium | Split reversed from original. Post-automotive, the demand shifts to general engineering and fabrication rather than low-carbon re-rolling. |  |
| 2→3 | Commercial Billets → Low Carbon | 40% (-20%) | Estimated | Rebar applications | Medium | Reduced share, but still significant for concrete reinforcing applications. |  |
| 2→3 | SBQ → Mining Equipment | 50% (+15%) | Estimated | Heavy machinery focus | Medium | Increased share reflecting the large scale of Australia's mining industry and its demand for specialized, high-strength steels. |  |
| 2→3 | SBQ → Oil/Gas Equipment | 20% | Estimated | Energy sector applications | Medium | Unchanged. |  |
| 2→3 | SBQ → Other Industrial | 30% (-15%) | Contextual | Replaces "Automotive Grade" | Low | This category replaces the now-obsolete automotive grade, covering general industrial machinery and agricultural equipment. |  |
| 2→3 | Structural Beams → Grade 300 | 80% | Estimated | Standard construction grade | Medium | Unchanged. This remains the standard grade for most commercial and residential construction in Australia. |  |
| 2→3 | Structural Beams → Grade 350/400 | 20% | Estimated | Replaces "300PLUS" | Medium | Renamed to reflect standard high-strength grades. Used in high-rise buildings, major infrastructure, and as specified by engineers for greater efficiency. |  |
| 2→3 | Rails → Standard Freight | 70% | Estimated | Freight network focus | Medium | Unchanged. The bulk of Australia's rail network is for heavy-haul freight. |  |
| 2→3 | Rails → Standard Passenger | 30% | Estimated | Urban passenger rail | Medium | Unchanged. Reflects ongoing and planned metro projects in major cities. |  |
| **RENEWABLE ENERGY STEEL INTENSITIES** |  |  |  |  |  |  |  |
| RE | Wind Onshore Steel Intensity | 80-120 tonnes/MW | Empirical | Multiple international sources | High | Range narrowed to reflect more common turbine sizes and designs. The original 50 t/MW is too low for modern multi-megawatt turbines. |  |
| RE | Wind Offshore Steel Intensity | 150-220 tonnes/MW | Empirical | International offshore research | High | Range adjusted slightly upwards to reflect larger turbine sizes and deeper water foundations. |  |
| RE | Solar Utility Steel Intensity | 35-45 tonnes/MW | Empirical | Multiple sources mounting systems | High | Unchanged. This figure is well-established and consistent. |  |