



QUALITY MANUALS | FIRST EDITION

End of Life Vehicle Treatment and Recycling

Automotive Quality Manual

STABLE RELEASE

Document No. IAF-MAN-ELV-001 | Revision 01

Vehicle depollution, selective dismantling, material processing
and verified recovery performance

International Automotive Federation

English master text | 15 September 2026

iaf.com

Publication identity and use

This manual defines the route from lawful acceptance of an end-of-life vehicle through depollution, dismantling and material treatment. It requires verified hazardous-component disposition before mechanical processing and separate, traceable accounting for reuse, recycling, other recovery and disposal.

Control	Publication record
Document	IAF-MAN-ELV-001 IAF End of Life Vehicle Treatment and Recycling Manual
Edition and revision	First Edition Revision 01 Stable Release
Text issue	15 September 2026 English master text
Document owner	IAF Quality function and the relevant automotive technical committee
Custodian	IAF Secretariat and Document Controller
Authority	Competent authority under the IAF Constitution and document-control process.
Operational adoption	The accountable operating organisation records its actual scope, approvals and effective date.
Classification	Public core manual. Completed product, personnel and technical records follow their assigned access controls.

Application of requirements

“Shall” identifies a requirement when adopted by an organisation or agreement.
“Should” identifies a recommendation. The responsible organisation shall implement the requirements through competent personnel, validated methods and controlled local specifications. Worked examples use fictional data and establish no universal test setting, tolerance or operating permission.

Publication and operational acceptance

Stable Release identifies the completed publication text. Actual technical validation, permits, product decisions and safe work authorisations shall be recorded by the responsible organisation. Mandatory requirements and current product-specific safety instructions remain controlling for the operation. Using this manual alone does not confer certification, accreditation, Corporate Recognised status or IAF mark rights.

Control of local implementation

Maintain exact legal identifiers, applicable dates, technical limits and operating parameters in controlled local registers. Use the annexes to build case records with actual evidence, names and dates. Apply the IAF Documents and Records Guide to revisions, retention, access and disposal. No approval or historical implementation is implied by a blank form or an illustrative calculation.

Contents

Select an entry to open its section. Page numbering includes the cover.

1 Purpose and treatment scope	4
2 Terms and recovery categories	4
3 Governance and accountability	5
4 Operating permissions and legal register	5
5 Facility layout and environmental infrastructure	6
6 Vehicle sourcing and lawful authority	6
7 Collection recovery and transport	6
8 Receipt identity and weighing	7
9 Hazard assessment and treatment eligibility	7
10 Depollution plan and release checkpoints	8
11 Electrical isolation and stored energy	8
12 Traction battery removal and routing	9
13 Fuel recovery and flammable liquids	9
14 Oils hydraulic fluids and filters	10
15 Coolants washer fluids and other liquids	10
16 Refrigerant identification and recovery	11
17 Gas fuel and pressurised systems	11
18 Pyrotechnic device identification and inventory	12
19 Controlled pyrotechnic treatment procedure	12
20 Other hazardous components and contamination	12
21 Selective dismantling and reusable parts	13
22 Powertrain components and remanufacturing cores	13
23 Electronics data and valuable materials	14
24 Glass removal and segregation	14
25 Tyres rubber and wheel assemblies	15
26 Plastics textiles and composite components	15
27 Body structures and controlled cutting	16
28 Pre crusher and pre shredder release	16
29 Crushing shredding and plant control	17
30 Metal separation and recovered material quality	17
31 Post shredder fractions and treatment residues	18
32 Downstream processor qualification	18
33 Mass balance and quantity reconciliation	19
34 Recovery targets and truthful performance claims	19
35 Design recyclability and manufacturer feedback	20
36 Emissions water and ground protection	20
37 Abnormal conditions and emergency response	20
38 Personnel competence and contractor control	21
39 Internal audit and management measures	21
40 Records interfaces and revision control	22
Annex A Facility adoption and treatment scope	22
Annex B Vehicle intake and treatment traveller	23
Annex C Fluid recovery and storage log	24
Annex D Pyrotechnic inventory and disposition record	24
Annex E Pre processing release checklist	25
Annex F Worked mass balance and recovery calculation	26
Annex G Downstream custody and outcome verification	26
Annex H Audit and incomplete depollution exercise	27

1 Purpose and treatment scope

1.1 This manual defines the controls for receiving, depolluting, dismantling and processing end-of-life vehicles and for verifying the destination of resulting parts and materials. It covers conventional, hybrid and battery-electric vehicles within an approved facility scope. Gas-fuelled, hydrogen, heavily damaged and other specialised vehicles require explicitly competent handling routes.

1.2 The intended outcome is safe, traceable treatment that preserves suitable parts for reuse or remanufacture and directs remaining materials to verified recovery or disposal. Treatment shall not begin solely because a vehicle has a low commercial value. Lawful authority, vehicle status, hazards and the site's permitted capabilities shall be established first.

1.3 The organisation shall define the boundary between collection, dismantling, depollution, shredding, material separation and downstream processing. Outsourced stages shall remain visible in the chain of custody and performance calculations. Sending a vehicle to another operator shall not by itself establish that its materials have been recycled.

1.4 This manual provides management and process requirements. Vehicle-specific information, engineered safe work instructions and actual local permissions shall govern hazardous operations. It does not provide a universal firing procedure for airbags, a generic high-voltage disconnection sequence or cutting settings applicable to every vehicle and processing plant.

2 Terms and recovery categories

2.1 An end-of-life vehicle is a vehicle that has entered the applicable end-of-life or waste route under the governing legal framework. A used vehicle intended for lawful continued operation is a different status. Staff shall not convert a vehicle between these categories through an invoice description when the actual condition and legal requirements indicate otherwise.

2.2 Depollution removes or safely manages fluids, energy sources and hazardous components before later treatment. Reuse retains a product or component for an appropriate further use. Remanufacturing restores a used product through a controlled industrial route. Recycling converts waste material into products, materials or substances under the applicable accounting definition.

2.3 Recovery is broader than material recycling and may include qualifying energy recovery. Disposal is a separate final route. Reusability, recyclability and recoverability calculated at the vehicle-design stage are potential outcomes under an assessed method; they are not evidence of the actual treatment performance of a particular facility or vehicle cohort.

2.4 The programme shall report reuse and recycling separately from total reuse and recovery. A 95 percent total recovery result shall not be labelled 95 percent material recycling. Where the organisation adopts a 95 percent recycling ambition, it shall define and measure that stricter objective separately, with no energy-recovery mass credited as recycling.

3 Governance and accountability

3.1 The accountable director shall approve the facility scope, resources and operating permissions. The treatment manager owns the controlled route. Environmental staff own waste classification, emissions and downstream evidence. Safety specialists approve hazardous work controls. Quality owns record integrity, release checkpoints and performance verification.

3.2 Named responsibilities shall cover vehicle acceptance, identity and ownership review, specialist depollution, reusable-part release, pre-shredder release, weighing and downstream reconciliation. Deputies shall have defined competence and authority. Production or purchasing staff shall not overrule an unresolved hazard or legal hold in order to clear the yard.

3.3 Specialist activities shall have explicit authorisations, including high-voltage battery work, refrigerant recovery, pressurised-fuel treatment and pyrotechnic management. The authority to move a vehicle shall not imply authority to perform these tasks. Contractors shall have a documented scope and shall provide the records needed for the facility's final treatment decision.

3.4 IAF adoption shall not replace a public operating permit, professional qualification, statutory destruction record or waste transport authorisation. Membership and Corporate Recognised status follow their respective federation processes. The operating entity shall remain accountable for the treatment it performs and the environmental claims it publishes.

4 Operating permissions and legal register

4.1 Before accepting a vehicle category or adding a process, the compliance owner shall verify the site's permissions, capacity and conditions. The controlled register shall cover vehicle status, waste, hazardous materials, transport, environmental releases, worker safety, product resale and reporting. Exact legal identifiers, current requirements and applicability dates shall be maintained in the local operating record.

4.2 The register shall distinguish requirements already applicable from future transition requirements. The organisation shall not claim conformity to a new framework solely because it has been announced or entered into force where application dates differ. Responsible staff shall review changes and identify the actions and evidence needed for the actual operation.

4.3 Cross-border movements shall use the correct classification and documentation for the vehicle or material. A claim that a damaged vehicle is intended for repair shall require the evidence and legal conditions applicable to that movement. Commercial value or a buyer's statement shall not automatically remove waste-shipment obligations.

4.4 Where the facility lacks permission or capability, it shall refuse the activity or arrange a lawful transfer to a suitable operator. Exceptions shall not be created through informal management approval. Records shall show the actual decision and route, including rejected loads and any required notification to competent authorities.

5 Facility layout and environmental infrastructure

5.1 The site layout shall separate reception, unassessed vehicles, hazardous-condition holds, depollution, reusable parts, treated shells and material storage. Traffic routes shall protect pedestrians and permit emergency access. Storage density shall remain within the site's engineered and permitted conditions rather than expand whenever incoming volume increases.

5.2 Areas handling fluids and contaminated vehicles shall have suitable surfaces, drainage and containment. The design shall account for compatible storage, spills, rainfall and contaminated runoff. An oil separator shall not be assumed to remove every dissolved chemical or contaminated firewater constituent.

5.3 Workstations shall provide stable vehicle support, suitable lighting, ventilation, lifting equipment and access to the required treatment points. Pits and enclosed spaces shall be assessed for vapour accumulation and other hazards. Vehicle stacking shall follow an engineered method appropriate to the condition of the vehicles and the handling equipment.

5.4 The infrastructure register shall identify inspection, maintenance and response requirements for drains, tanks, barriers, extraction and protective systems. Defects affecting safe or lawful operation shall trigger restriction of the affected activity. A production workaround shall not bypass a failed containment or protective function.

6 Vehicle sourcing and lawful authority

6.1 The acceptance process shall establish the sender's identity, right to transfer the vehicle and the lawful authority for end-of-life treatment. Available ownership, registration, insurance or other relevant records shall be reconciled with the physical vehicle. Conflicting identifiers or uncertain title shall create a hold for the appropriate legal review.

6.2 The source shall provide known information about propulsion, damage, fire, flood, contamination and unusual contents. Missing information shall be recorded as unknown. Contracts shall define prohibited loads, documentation, collection preparation and responsibility for discrepancies, without encouraging the concealment of expensive hazardous conditions.

6.3 The organisation shall distinguish a vehicle accepted for destruction from a vehicle held for appraisal, repair or resale. Irreversible dismantling shall require the correct status and authority. Parts shall not be removed for sale from a disputed vehicle merely because they are easy to recover before the ownership issue is resolved.

6.4 Source performance shall include identity errors, undeclared hazards, incomplete records and response to corrective action. Repeated discrepancies shall lead to stronger controls or suspension. Staff shall preserve factual evidence and use the authorised escalation route without making unsupported public allegations against a supplier or owner.

7 Collection recovery and transport

7.1 The collection planner shall identify vehicle condition, propulsion type, mobility, leakage, structural stability and special handling needs before dispatch. The recovery operator shall have equipment and competence suitable for the actual vehicle. Towing

or lifting methods shall follow the relevant vehicle and equipment information, particularly where movement can create electrical or mechanical hazards.

7.2 Damaged high-voltage batteries, gas systems or unstable structures shall receive specialist assessment and an approved transport route. Ordinary recovery staff shall not improvise isolation, venting or pyrotechnic treatment to make loading easier. The sender and receiver shall agree the condition and restrictions before the vehicle leaves its location.

7.3 The consignment record shall retain identity, sender, recipient, route, handling condition and incidents. Packaging or containment shall address detached hazardous components and leakage where required. Changes in destination shall be approved only where the new receiver can lawfully and safely accept the declared condition.

7.4 Receipt shall close the custody transfer with quantity and condition reconciliation. Transport damage or newly observed hazards shall be recorded and assessed before treatment. A vehicle's arrival at the gate shall not constitute technical acceptance or proof that the collection operation followed the required safe route.

8 Receipt identity and weighing

8.1 Receiving personnel shall reconcile the physical vehicle with the consignment and acceptance records. The intake identity shall connect the vehicle, its status, photographs where appropriate, source and subsequent material records. Altered, missing or inconsistent identifiers shall create a controlled hold until a lawful disposition is established.

8.2 The weighing method shall define gross, tare and net mass, equipment, units and relevant conditions. The record shall identify loads, trailers, loose material and items not belonging to the vehicle cohort. A catalogue curb mass shall not be substituted for a required measured intake mass without a justified and disclosed method.

8.3 The operator shall record visible hazards, missing major parts, foreign objects and unusual contamination before processing. A vehicle with a removed battery or engine shall not be reported as a complete vehicle if that changes the applicable calculation boundary. Information supplied by the sender shall remain distinguishable from observations made at the facility.

8.4 The system shall assign a status that prevents unrestricted treatment before the required review. Rejected or held vehicles shall remain traceable and protected against accidental processing. Corrections to intake data shall preserve the original entry, reason and approving person so that later mass and compliance reports remain auditable.

9 Hazard assessment and treatment eligibility

9.1 A competent assessor shall review each vehicle for propulsion, damage, stored energy, chemical contamination and unusual contents. The review shall include batteries, pressurised systems, undeployed restraint devices and any evidence of fire or flood. A severely damaged vehicle shall not enter the ordinary route merely because it resembles a familiar model.

9.2 The assessor shall determine whether the site can safely and lawfully complete the necessary treatment. Specialist support shall be arranged where information,

equipment or competence is insufficient. The decision shall state permitted movement, storage and work, with restrictions visible to all subsequent operators.

9.3 Active leakage, heat, gas release, unstable loads or other immediate hazards shall trigger the site's protective response. Staff shall not energise, start, cut or crush an uncertain vehicle to determine whether it is safe. Emergency action shall follow the relevant plan, with rescue and exposure control taking priority over material recovery.

9.4 Eligibility shall be reviewed when dismantling reveals a hidden hazard or an unrecorded modification. The original assessment shall be updated with evidence and a new work boundary. A cleared initial screen shall not authorise every later task when the vehicle's condition or the available information has changed.

10 Depollution plan and release checkpoints

10.1 The treatment planner shall select the current vehicle-specific depollution route and confirm its compatibility with the site's equipment. The plan shall identify fluids, batteries, gas systems, pyrotechnics and other hazardous components, together with the competent personnel and records required for each task. A generic checklist shall be supplemented where the vehicle contains additional systems.

10.2 Work shall proceed through defined checkpoints: eligibility and safe preparation, controlled removal or treatment of hazardous contents, verification of completion, selective dismantling and release for subsequent mechanical processing. The exact technical sequence shall follow the approved vehicle-specific instructions and risk assessment rather than a universal order copied between propulsion types.

10.3 Each task shall record completion, actual outputs, unresolved conditions and the operator. A not-applicable entry shall have a reason supported by the vehicle's configuration or inspection. Missing components shall be recorded as missing, not assumed to have been properly treated by someone else.

10.4 The final depollution reviewer shall reconcile the vehicle's hazard inventory with the completed evidence. Any unresolved energy source, fluid system or pyrotechnic device shall prevent unrestricted crushing or shredding. The release status shall be visible physically and electronically, and shall be withdrawn if later information shows the treatment was incomplete.

11 Electrical isolation and stored energy

11.1 Electrical work shall be performed by personnel authorised for the vehicle architecture and task. The safe work instruction shall address low-voltage supplies, high-voltage systems, capacitors and other relevant energy sources. It shall identify the verification needed before the next operation and the points that may remain hazardous after isolation.

11.2 The technician shall use current vehicle-specific information and suitable verified equipment. The safe boundary shall be established and recorded before dismantling or depollution activities that could contact electrical components. Removing a connector or observing a dark display shall not be treated as proof that all stored energy is absent.

11.3 Vehicle movement and mechanical work shall be assessed for the possibility of generating or releasing energy. The plan shall address damaged wiring, inaccessible isolation points and missing technical information through a specialist route. Ordinary

operators shall not cut unidentified cables or bypass protective devices to speed up treatment.

11.4 The handover shall state the completed controls, remaining hazards and permitted work. Later discovery of an unassessed energy source shall stop the affected task and trigger reassessment. The vehicle shall not be released for crushing or shredding until all relevant energy sources have received the required disposition and verification.

12 Traction battery removal and routing

12.1 The battery removal plan shall identify the battery, its condition, lifting and support requirements, connected systems and intended destination. Removal shall follow the authorised vehicle-specific procedure. Damaged, unstable or thermally affected batteries shall require specialist assessment and shall not pass through the routine removal route by default.

12.2 The technician shall record the actual condition before and after removal, including any leakage, deformation, connector damage or handling incident. A removed battery may retain hazardous internal voltage and chemical energy. Its label and handover record shall state remaining hazards and shall not describe it as inert merely because it is disconnected from the vehicle.

12.3 Routing shall distinguish candidate second-life assessment, approved repair or remanufacture, and material recovery. The battery's capacity estimate alone shall not determine the route. Any candidate for stationary reuse shall enter the separate assessment and integration controls in IAF-MAN-SLB-001, with no automatic approval created by the dismantler.

12.4 Storage and transport shall match the battery's actual condition and receiving facility capability. The vehicle and battery records shall remain linked, including mass accounting and custody. The dismantler shall obtain confirmation of receipt and the evidence needed for its treatment reporting without counting the same mass twice across separate reporting boundaries.

13 Fuel recovery and flammable liquids

13.1 Fuel treatment shall use a vehicle-specific method and equipment suitable for the fuel and hazard conditions. The task assessment shall address vapour, ignition sources, static electricity, ventilation, damaged tanks and operator exposure. Fuel recovery shall occur only in a prepared area under the site's approved safe work controls.

13.2 The operator shall identify the fuel and compatible receiving container before work begins. Unknown or mixed fuels shall be segregated for assessment. The procedure shall define how completion is verified and how residual leakage is controlled. This manual does not authorise improvised drilling, hot work or venting of an unidentified tank.

13.3 Recovered fuel shall be labelled, contained and transferred to an approved storage or treatment route. Different fluids shall not be mixed merely to reduce the number of containers. Reuse or sale shall require the applicable quality and legal conditions, with records distinguishing recovered product from waste awaiting treatment.

13.4 Any spill, unusual vapour condition or equipment fault shall stop the task and trigger the appropriate response. The vehicle shall retain an unresolved status until the fuel system has been properly addressed. A tank that no longer supplies an engine shall not automatically be considered empty, free of vapour or safe for cutting.

14 Oils hydraulic fluids and filters

14.1 The depollution instruction shall identify the relevant engine, transmission, differential, steering, brake, clutch and suspension fluid systems for the vehicle. Operators shall use suitable collection equipment and stable access arrangements. The method shall account for reservoirs, lines and retained volumes that may not be removed by one visible drain point.

14.2 Recovered fluids shall be segregated according to compatibility, destination requirements and the site's approved classification. Containers shall be labelled and protected against leakage, overfilling and incompatible additions. Mixing brake fluid, oil or other streams shall be prohibited unless the approved treatment route explicitly permits it.

14.3 The operator shall record the systems treated, recovered quantities where required and any inaccessible or damaged component. Completion shall be verified under the approved method. A generic elapsed time shall not replace evidence that the particular system was adequately treated, especially where deformation or blockage prevents normal drainage.

14.4 Filters and fluid-bearing components shall enter a controlled route that captures remaining liquid and meets downstream acceptance requirements. The vehicle shall not be released while a required fluid system remains unresolved. Container transfers and offsite treatment shall remain linked to the facility's inventory and mass accounting without attributing the same material to multiple outcomes.

15 Coolants washer fluids and other liquids

15.1 The vehicle-specific inventory shall include cooling circuits, washer systems, exhaust-treatment fluids and any other liquid system within scope. Operators shall identify the fluid and receiving container before recovery. Similar appearance shall not establish chemical compatibility or justify combining streams with different treatment requirements.

15.2 Recovery shall use suitable equipment and a method that addresses connected reservoirs and trapped volumes. The work area shall contain spills and protect drains. Water-based fluids shall not be discharged to the ground or drainage system on the assumption that they are harmless because they are not oil.

15.3 The environmental function shall define storage, classification and treatment for each stream, including unknown mixtures. An oil separator shall not be relied upon to remove dissolved constituents from coolant or other aqueous fluids. Contaminated absorbents, rinses and cleaning residues shall be included in the appropriate waste route.

15.4 The record shall identify the systems completed and any remaining limitation. Damaged or inaccessible circuits shall receive a documented alternative treatment or specialist disposition. The final depollution review shall reconcile these entries with the

vehicle configuration before release to operations that could rupture remaining fluid-containing parts.

16 Refrigerant identification and recovery

16.1 Refrigerant work shall be performed by competent personnel using equipment suitable for the identified refrigerant and system. The operator shall verify the available vehicle information and consider previous servicing or contamination. An unverified label shall not justify mixing an unknown refrigerant with an established recovered stream.

16.2 The recovery procedure shall define the approved equipment, compatible containers, safe connections, process controls and completion verification. Refrigerant shall be recovered through the authorised route and shall not be intentionally vented as a depollution shortcut. The method shall account for the system's design and actual condition rather than rely on a universal treatment time.

16.3 Recovered material shall remain identified and segregated for lawful reuse, reclamation or disposal as appropriate. Container mass or other required quantity evidence shall be recorded using suitable equipment. The facility shall control overfilling, leaks and handling conditions, and shall not return an uncertain mixture to ordinary service stock.

16.4 The vehicle record shall retain the refrigerant type or uncertainty, recovery result, operator and equipment identity. A damaged system with little recovered material shall not automatically be treated as previously emptied correctly. Unresolved condition or incomplete recovery shall be assessed before subsequent cutting, crushing or other work that could release remaining contents.

17 Gas fuel and pressurised systems

17.1 The acceptance assessment shall identify gas-fuelled and hydrogen systems, pressure vessels, pneumatic suspension and other relevant stored-pressure devices. These shall enter a specialised route with current design information and authorised personnel. A dashboard indication of empty shall not prove the absence of residual pressure or flammable contents.

17.2 The task-specific procedure shall define the permitted isolation, recovery, depressurisation and removal process using suitable equipment and facilities. This manual does not prescribe a generic venting or flaring sequence. Personnel shall not cut, heat, drill or dismantle an uncertain pressure vessel to make it suitable for ordinary scrap handling.

17.3 Removed vessels and components shall carry a documented status stating what was completed and what hazards remain. Storage and transport shall follow the actual condition and approved destination. A painted mark or an open valve shall not substitute for reliable evidence of the treatment required before material processing.

17.4 The final vehicle release shall confirm that every relevant pressurised system has been addressed. Missing information, damaged access points or unidentified modifications shall trigger specialist review. The facility shall maintain a clear refusal or transfer route when its permissions or technical capability do not cover the system presented.

18 Pyrotechnic device identification and inventory

18.1 The vehicle assessment shall identify airbags, seat-belt pretensioners and other pyrotechnic devices, including devices outside the most visible cabin positions. Current vehicle-specific information shall be used to establish the expected inventory. Collision damage, missing trim or a previously deployed airbag shall not prove that all pyrotechnic devices are spent.

18.2 The inventory shall record each device or defined assembly, location, identity where available and observed status. Uncertain, damaged or inaccessible devices shall remain explicitly unresolved. Personnel shall not probe connectors, apply improvised electrical sources or dismantle a device in order to determine whether it is live.

18.3 The authorised specialist shall select the permitted route for each device: controlled removal for specialist treatment or controlled deployment where lawful and technically suitable. The decision shall consider device design, condition, vehicle configuration, site permissions and the dedicated safe work procedure. Routine dismantlers shall not choose a method solely for convenience.

18.4 The inventory shall remain attached to the vehicle record until all devices have a verified disposition. Removed live devices shall retain identity, storage controls and custody. They shall not be placed into general parts stock, mixed scrap or ordinary waste, and commercial resale shall not proceed without the necessary legal and technical eligibility.

19 Controlled pyrotechnic treatment procedure

19.1 Before pyrotechnic treatment, the authorised specialist shall confirm the device inventory, selected route, current technical instruction, suitable equipment and approved work area. The site shall verify access control, coordination with other operations and emergency arrangements. Only personnel specifically authorised for the method may perform the treatment.

19.2 Where controlled deployment is the accepted route, it shall use the validated device-specific system and the specialist procedure. That procedure shall contain the actual engineering parameters and protective measures. This public manual intentionally establishes the authorisation and verification process without supplying firing circuitry, activation settings or improvised deployment instructions.

19.3 Following treatment, the specialist shall verify and record the outcome for each device using the approved method. An unsuccessful or uncertain result shall remain on hold and enter the specified specialist response. Personnel shall not repeatedly attempt activation, approach or disassemble a suspect device outside that response procedure.

19.4 Release shall require reconciliation of expected devices, verified treated devices and any removed items transferred for specialist treatment. The record shall identify the operator, method revision, date, equipment and unresolved exceptions. Any unresolved pyrotechnic hazard shall block unrestricted crushing or shredding, regardless of the vehicle's otherwise completed depollution status.

20 Other hazardous components and contamination

20.1 The hazard inventory shall consider low-voltage batteries, mercury-containing items where present, hazardous brake or friction materials, contaminated filters,

catalysts and other components requiring a specialised route. The actual vehicle age, design and condition shall determine applicability. A standard list shall not be treated as exhaustive for an unusual or modified vehicle.

20.2 Removal shall use methods that prevent unnecessary breakage, dust generation and exposure. Suspected hazardous fibres or unknown contamination shall be assessed by competent personnel before ordinary cleaning or cutting. Staff shall not use compressed air or uncontrolled dry brushing to remove material whose exposure risks are unresolved.

20.3 Components shall be placed into compatible, identified containers with appropriate storage and transfer controls. Valuable content shall not remove hazardous-waste obligations. The receiving processor's ability to accept the actual material and condition shall be established before shipment, with records supporting the final treatment route.

20.4 Discovery of a previously unrecorded hazardous component shall stop the affected downstream operation and update the vehicle record. The environmental and safety functions shall determine the required response and any population impact. Vehicles already released under an incomplete inventory shall be reassessed where the same omission may apply.

21 Selective dismantling and reusable parts

21.1 The dismantling plan shall identify parts eligible for potential reuse, remanufacture or specialised material recovery before bulk processing. Selection shall consider legal restrictions, demand, condition, traceability and the ability to verify suitability. A part's apparent value shall not establish that it is safe or lawful to return to vehicle service.

21.2 Removed parts shall retain source identity, observed condition and a status showing whether they are unassessed, accepted for a defined use or intended only as remanufacturing cores. The dismantler shall not label an untested used part as remanufactured or new. Safety-related products shall receive the specific eligibility and verification required for their application.

21.3 Dismantling shall protect the candidate part and prevent contamination or damage to adjacent retained items. The operator shall record defects and any damage created during removal. Storage shall preserve condition and maintain separation from rejected parts, hazardous components and general material streams.

21.4 Release for resale or transfer shall identify the product status, compatible application, known limitations and responsible supplier. A downstream remanufacturer shall receive the history and inspection evidence required by IAF-MAN-RMC-001. Shipment to a remanufacturer shall not be counted as completed product reuse until the programme's accounting rule and evidence support that outcome.

22 Powertrain components and remanufacturing cores

22.1 Engines, blocks, transmissions, differentials and rotating electrical units shall be assessed for identity, damage, contamination and the agreed core acceptance requirements. The dismantler shall preserve useful failure evidence and identify fire, flood or severe collision exposure. Cleaning shall not be used to disguise a condition that the remanufacturer needs to know.

22.2 Removal shall use suitable lifting and support equipment and the approved technical method. Openings shall be protected against dirt and residual leakage. Matched or serialised items shall remain linked where separation could compromise later assessment. Improvised cutting or heating shall not damage a retained core's structural or material integrity.

22.3 The transfer record shall state the core family, source, known history, missing items, observed defects and any preliminary work performed. Commercial grading shall be distinguishable from the remanufacturer's final technical acceptance. A dismantler's statement that a unit turns freely shall not be presented as a complete functional or durability assessment.

22.4 Rejected cores shall enter the appropriate material route with hazardous contents addressed. The organisation shall prevent rejected safety-related or structurally damaged components from re-entering used-parts stock under another label. Mass accounting shall distinguish retained product routes from later material recovery and shall avoid crediting both for the same mass.

23 Electronics data and valuable materials

23.1 Electronic components shall be selected for reuse, remanufacture or specialised recycling according to identity, condition and technical capability. Boards, sensors, control units and power electronics shall be protected against unnecessary mechanical damage and electrostatic exposure where their function is to be preserved. Unknown or damaged devices shall remain clearly classified.

23.2 The data-control process shall identify personal, security and proprietary information in vehicle systems. Lawful erasure or access restriction shall preserve technical evidence required for safety and traceability. Staff shall not bypass security controls or copy customer data in order to increase the resale value of a component.

23.3 Specialised recovery of copper, magnets, circuit boards and other valuable materials shall use qualified routes. Removal methods shall consider sharp parts, stored energy and chemical or dust hazards. High value shall not justify uncontrolled burning, chemical extraction or handling outside the facility's authorised capability.

23.4 The record shall identify the destination and actual treatment of electronic fractions. A mixed-electronics shipment shall not be reported as recovered metal at its full gross mass. Downstream evidence shall support the credited material quantities and distinguish reusable components, recycled outputs, residues and unresolved processing balances.

24 Glass removal and segregation

24.1 The glass plan shall identify relevant vehicle glazing types, embedded components and the receiving processor's requirements. Reuse eligibility shall be assessed separately from recycling suitability. Damage, markings, coatings and vehicle-specific installation conditions may affect whether a pane can lawfully and safely return to service.

24.2 Removal shall use a suitable method that controls sharp edges, breakage, dust and manual handling. Operators shall protect themselves and adjacent reusable parts. The method shall be adapted to bonded glazing and other assemblies without improvising uncontrolled cutting or impact that creates avoidable exposure.

24.3 Recycling streams shall meet the receiving route's contamination and segregation requirements. Laminates, adhesives, ceramic features and attached hardware shall be addressed under the approved process. A container of mixed vehicle glass shall not be assumed suitable for every glass manufacturing application.

24.4 The facility shall record quantities, destination and confirmed treatment evidence. Breakage and residual materials shall be included in the mass balance. Process improvement shall seek better recovery and reduced contamination while preserving safety; production targets shall not reward unsafe removal or unsupported claims about closed-loop recycling.

25 Tyres rubber and wheel assemblies

25.1 Tyres and wheel assemblies shall be classified for lawful reuse, retreading where applicable, material recovery or disposal. Reuse assessment shall follow the relevant product and market criteria and shall consider damage, age information where available and service history limitations. A visible tread depth alone shall not establish overall suitability.

25.2 Removal and handling shall use appropriate equipment and competent personnel, with stored pressure and heavy assemblies addressed in the task assessment. Damaged or unusual assemblies shall receive specialist review. Staff shall not use improvised methods that create uncontrolled pressure release or expose them to unstable components.

25.3 Rubber streams shall be segregated according to the receiving route. The facility shall distinguish material recycling from qualifying energy recovery and shall retain evidence for the reported category. Sending tyres to an intermediary shall not prove the final route or justify a recycling claim for the entire shipment.

25.4 Stock control shall address fire load, storage conditions, quantity limits and emergency access. Wheel metals, balance weights and other attachments shall be accounted for without duplicate credit. The site shall investigate unexplained inventory growth and avoid accumulating material whose lawful downstream capacity is uncertain.

26 Plastics textiles and composite components

26.1 The dismantling strategy shall identify polymer, textile and composite components whose selective removal improves actual material recovery. Selection shall consider material identification, contamination, dismantling effort and available receiving routes. A technical recyclability claim shall be supported by a feasible process rather than the mere presence of a resin marking.

26.2 Operators shall segregate compatible streams and preserve material information where available. Painted, filled, reinforced and multilayer materials may require different routes. Mixing shall be controlled against the receiving processor's specification, and a visually similar plastic shall not automatically be treated as the same material.

26.3 Composite cutting or size reduction shall use an assessed method that controls dust, fibres and ignition or equipment hazards. The facility shall not burn coatings or use uncontrolled solvents to simplify separation. Work outside its capability shall be transferred to a qualified specialist with the actual material and condition declared.

26.4 Reports shall distinguish reusable components, recycled polymer or fibre outputs, energy recovery and residues. The full mass of a mixed component shall not be credited as recycled material when only part reaches a verified recycling outcome. Opportunities for improved design and separation shall be recorded for feedback to manufacturers and relevant IAF technical work.

27 Body structures and controlled cutting

27.1 Structural dismantling shall begin only after the relevant depollution and hazard checkpoints are accepted. The work plan shall assess vehicle stability, residual energy, load paths and the effect of removing structural members. Personnel shall use appropriate supports and lifting arrangements as the vehicle's centre of mass and strength change.

27.2 Cutting and separation methods shall be selected for the material and condition. Hot work, where permitted, shall require the site's specific authorisation and confirmation that flammable contents and other relevant hazards have been addressed. A fuel-system treatment record shall not automatically establish that every enclosed cavity is safe for hot work.

27.3 High-strength steels, aluminium, magnesium-containing parts and composites shall be considered in tooling and exposure controls. Unidentified materials shall trigger assessment where they can change the hazard or recovery route. Equipment operators shall not exceed rated capabilities or bypass guards to process an unusually thick or damaged structure.

27.4 The output shall retain the correct status for material handling and downstream processing. Reusable structural components shall follow separate eligibility and product verification requirements. Scrap designation shall not be used to conceal an unresolved hazardous component inside a shell or mixed body section.

28 Pre crusher and pre shredder release

28.1 A designated competent person shall authorise each vehicle or controlled batch for crushing or shredding. The reviewer shall reconcile identity, completed depollution, battery removal, pressurised-system disposition, pyrotechnic inventory and other hazardous-component records. A completed general checkbox shall not replace evidence for unresolved individual systems.

28.2 The physical inspection shall confirm that the recorded status matches the actual shell or load. Foreign objects, loose cylinders, batteries and undeclared materials shall be checked using the approved method. A load assembled from several sources shall remain traceable to the release evidence for each contributing vehicle or material stream.

28.3 Any uncertainty shall create a hold. The operator shall not rely on the expectation that a hazardous component will be destroyed harmlessly by the machine. A changed load, broken seal where used or later discovery of omitted treatment shall withdraw the release until the discrepancy is resolved.

28.4 The authorisation shall identify the reviewer, time, vehicle or batch, destination and restrictions. The receiving processing operator shall verify acceptance against its own capability and feed requirements. The release record confirms the defined

treatment checks; it does not excuse later operators from responding to newly observed hazards.

29 Crushing shredding and plant control

29.1 Mechanical processing shall use engineered equipment within its approved feed, capacity and operating limits. The plant shall have suitable guarding, interlocks, extraction, detection and emergency arrangements for its process. Operators shall verify feed status and shall reject loads that contain unresolved hazardous items or exceed the plant's accepted specification.

29.2 Startup and changeover checks shall confirm protective systems, clear work areas and the correct operating configuration. Access to dangerous machinery shall follow an approved isolation and safe work process. Personnel shall not enter, reach into or clear a jammed machine through an improvised method while hazardous energy remains uncontrolled.

29.3 Abnormal noise, vibration, heat, fire indications or unexpected contents shall trigger the defined stop and response. The operator shall preserve the identity of the affected feed and output where practicable. Restart shall require investigation, safe condition verification and the appropriate technical authorisation rather than only resetting the alarm.

29.4 Production records shall link feed quantity, operating period, interruptions, outputs and residues. Maintenance and protective-system checks shall be retained. Capacity and recovery targets shall not encourage unsafe feed, disabled controls or the processing of vehicles whose depollution evidence is incomplete.

30 Metal separation and recovered material quality

30.1 The separation plan shall define the intended ferrous and non-ferrous streams, equipment settings, contamination limits and sampling methods. The process shall address attached materials and alloy mixing where these affect downstream use. A high gross metal fraction shall not by itself establish the quality required for a particular manufacturing application.

30.2 Operators shall verify equipment function and monitor representative outputs. Sampling shall reflect the actual stream and variability, with results linked to the processing period. Changes in feed composition, separator performance or contamination shall trigger adjustment and verification under the approved process rather than unrecorded operator tuning.

30.3 Recovered material shall be graded and described accurately to the receiving processor. The facility shall not declare a high-purity alloy stream without evidence of the relevant composition and contamination controls. Customer acceptance requirements shall be incorporated into the output specification and shipment review.

30.4 Mass records shall distinguish saleable material, reprocessing returns and disposal residues. Reprocessing within the facility shall not create additional recovered mass in the same reporting boundary. Downstream confirmation shall support final recovery claims and identify any rejected or downgraded material requiring correction of earlier estimates.

31 Post shredder fractions and treatment residues

31.1 The facility shall characterise post-shredder fractions and residues sufficiently to select lawful, technically suitable routes. The assessment shall consider material composition, contamination, hazardous properties and variability. A stream shall not be classified as a clean single material merely because that description produces a more favourable sales value or recovery rate.

31.2 Further separation shall use approved methods with defined output specifications and exposure controls. Trial routes shall remain controlled until their performance and destinations are verified. An innovative process claim shall not justify unrestricted shipment of uncertain material to a receiver whose capability has not been demonstrated.

31.3 The record shall distinguish material sent for additional processing from material that has reached a confirmed recycling, recovery or disposal outcome. Estimated yields shall be identified as estimates and reconciled when actual results become available. Residues from downstream processing shall be included according to the defined accounting boundary.

31.4 The environmental owner shall review repeated rejections, unusual composition and changing treatment capacity. Accumulation shall remain within permitted storage conditions. Where a route closes, the facility shall use the business continuity process to secure a lawful alternative rather than relabel the material or leave its final destination unverified.

32 Downstream processor qualification

32.1 Before approving a processor or intermediary, the organisation shall verify its identity, permissions, relevant technical capability and actual destination chain. The scope shall cover the material and condition being supplied. A general commercial registration or broad environmental statement shall not prove that a site can treat every hazardous or mixed automotive fraction.

32.2 Contracts shall define material specifications, quantity evidence, accepted treatment routes, change notification and access to records. The processor shall provide confirmation of receipt and sufficient evidence of final outcomes for the facility's claims. Use of an intermediary shall not remove the need to understand the ultimate treatment route.

32.3 Oversight shall be proportionate to risk and may include record review, site assessment, sampling and reconciliation of output evidence. Unexplained yield claims, repeated changes of destination or implausibly complete recovery shall trigger investigation. The organisation shall not rely solely on a generic certificate that cannot be linked to the supplied material.

32.4 Suspension or rejection shall have a defined response for material in transit and stored output. The facility shall preserve custody and obtain a lawful alternative route. Any unsupported recovery credit shall be withheld or corrected until the evidence establishes the actual outcome under the programme's calculation method.

33 Mass balance and quantity reconciliation

33.1 The accounting method shall define the reporting cohort, time period, included vehicle categories and measurement basis. Inputs shall distinguish vehicle mass, foreign material, purchased process materials and transfers from other periods. Outputs shall distinguish reused parts, recycled material, other recovery, disposal and stock remaining within the boundary.

33.2 For a closed cohort, input mass shall reconcile with classified outputs, closing stock and explained process differences, after accounting for opening stock and transfers where relevant. Scales, sampling and allocation methods shall have defined capability and uncertainty. Unexplained differences shall be investigated rather than allocated automatically to a favourable recovery category.

33.3 The same material shall be counted once at the defined outcome. Internal transfer, reprocessing and shipment through an intermediary shall not create new recovered mass. Batteries or components reported through another scheme shall have transparent boundary treatment so that combined reports do not duplicate their contribution.

33.4 The reviewer shall retain the supporting weigh records, destination evidence, allocation calculations and corrections. Pending downstream treatment shall remain pending under the applicable accounting rule. A report shall not assume that every shipped tonne was fully recycled simply because it left the facility with a recovery contractor.

34 Recovery targets and truthful performance claims

34.1 The organisation shall adopt explicit targets appropriate to its scope and applicable obligations. Where it uses a 95 percent reuse-and-recovery target and an 85 percent reuse-and-recycling target, each shall be calculated separately from the same justified reporting boundary. These are distinct metrics and shall not be combined into an ambiguous recycling percentage.

34.2 Reuse-and-recycling performance shall use the mass credited to qualifying reuse and material recycling divided by the relevant input mass. Reuse-and-recovery performance shall additionally include qualifying other recovery under the applicable method. Energy recovery shall never be relabelled material recycling to satisfy a recycling target.

34.3 A stricter 95 percent material-recycling ambition may be adopted as an internal or contractual objective, with a defined numerator, baseline and improvement plan. The organisation shall state whether it means material recycling alone or reuse plus recycling. It shall not describe an aspiration as an achieved result or a universal legal requirement.

34.4 Performance reports shall identify the period, cohort, evidence status and limitations. A result for one facility, model or sample shall not be presented as the outcome for every vehicle. Annex F illustrates a closed mass balance with fictional numbers and shows why a 95 percent recovery result can coexist with a lower recycling result.

35 Design recyclability and manufacturer feedback

35.1 Design-stage assessment shall identify the vehicle configuration, material inventory, dismantling assumptions and available treatment technologies. The method shall distinguish theoretical material potential from technically and practically supported routes. A material's ability to be recycled in a laboratory shall not automatically establish a viable route for a mixed vehicle component at scale.

35.2 The assessment shall record reusability, recyclability and recoverability according to a controlled method and boundary. It shall identify assumptions about batteries, hazardous materials, composites, adhesives and mixed assemblies. A design-stage percentage shall remain distinguishable from the actual treatment rate measured at a facility.

35.3 Dismantlers shall provide evidence-based feedback on inaccessible fasteners, missing material information, difficult fluid recovery and components that hinder safe separation. Feedback shall identify the vehicle family, observed problem and its effect on treatment. It shall avoid disclosing unnecessary personal or confidential information.

35.4 Manufacturers and relevant IAF technical groups may use this information to improve design, dismantling data and material selection. Changes shall be evaluated for safety and product performance as well as circularity. An easier-to-dismantle design shall not be promoted at the expense of required crash, durability or electrical protection functions.

36 Emissions water and ground protection

36.1 The environmental control plan shall identify potential releases from depollution, storage, cutting, shredding and material treatment. Controls shall address dust, vapour, noise, wastewater and contaminated runoff as relevant. The facility shall monitor the conditions required by its permits and risk assessment, with clear responsibilities and reaction limits.

36.2 Drainage and containment shall be inspected and maintained. Spills shall be prevented from reaching unprotected ground or uncontrolled drainage through the approved response. Fluids and residues shall not be diluted or mixed merely to change their apparent classification or simplify disposal.

36.3 Extraction and filtration systems shall be suitable for the process and material. Equipment faults or abnormal emissions shall trigger restriction or shutdown of the affected activity. Operators shall not continue work on the assumption that outdoor location alone provides adequate exposure or environmental control.

36.4 Records shall link monitoring results, maintenance, incidents and corrective action. The environmental review shall compare measured releases and resource use with the operating boundary and actual throughput. Claims of a clean or zero-waste process shall require evidence that includes residues and offsite treatment rather than only the visible condition of the yard.

37 Abnormal conditions and emergency response

37.1 The site emergency plan shall address fire, fuel release, battery deterioration, gas leakage, machinery incidents, unstable loads and significant environmental releases within the facility's scope. It shall define alarm routes, evacuation, access for

responders and information about stored hazards. Plans shall remain usable during power or network loss.

37.2 Personnel shall follow the response appropriate to their training and authority. They shall not attempt improvised pyrotechnic treatment, move an unstable battery or enter dangerous machinery to protect production. Immediate protective actions shall prioritise people and prevent additional exposure while trained specialists assess the event.

37.3 The incident record shall preserve the affected vehicle or material identities, time, observed condition and actions. Potentially affected output shall be held where heat, contamination or loss of traceability could change its suitability. Emergency disposal shall still follow a lawful route once immediate life-safety needs are addressed.

37.4 Restart shall require competent verification of the site, equipment, material status and protective systems. The investigation shall address causes and the effectiveness of response. Lessons shall update work instructions, storage arrangements and training, with a check that the changes improve actual performance rather than only complete administrative actions.

38 Personnel competence and contractor control

38.1 The competence matrix shall define required knowledge and practical skills for acceptance, weighing, dismantling, fluid recovery, specialist hazards, plant operation and environmental reporting. Authorisations shall identify limits and review conditions. General experience in a scrap yard shall not qualify a person for high-voltage, refrigerant or pyrotechnic work.

38.2 Training shall include vehicle-specific information, correct use of equipment, status recognition and stop conditions. Practical assessment shall challenge abnormal situations such as an unknown propulsion system, incomplete depollution record or unexpected battery in a feed load. Supervision shall be defined for trainees and temporary staff.

38.3 Contractors shall receive a clear scope, site induction, work boundaries and required records. Their competence and permissions shall be verified for the actual task. The facility shall coordinate simultaneous activities so that a specialist operation does not expose unrelated workers or interfere with emergency access.

38.4 Employees and contractors shall have protected routes for reporting safety, environmental and integrity concerns. Management shall review workload, equipment and instruction quality when errors recur. Production targets shall not reward skipped checks, hidden spills or unsupported treatment certificates.

39 Internal audit and management measures

39.1 The audit programme shall trace selected vehicles from acceptance to depollution, released parts, processed materials and verified destinations. It shall also trace selected output claims backward to weigh records and source vehicles. Samples shall include unusual vehicles, outsourced treatment, rejections and corrected reports rather than only straightforward completed cases.

39.2 Auditors shall observe actual work and compare it with the current authorised procedure. They shall verify specialist competence, equipment status and the evidence

behind not-applicable entries. A signed checklist shall not establish treatment when the physical vehicle or subsequent output shows an unresolved hazardous component.

39.3 Management measures shall include incomplete depollution, pre-shredder rejections, spills, unknown destinations, mass-balance differences and separately defined recovery rates. Trends shall distinguish changes in vehicle mix from process effectiveness. A higher reported percentage shall be investigated if it coincides with weaker evidence or a changed denominator.

39.4 Corrective action shall identify the affected population, cause, responsible owner and effectiveness check. Serious issues shall trigger review of prior releases and claims. Management shall allocate resources for lawful treatment and verified destinations instead of using risk acceptance to waive mandatory safety or environmental obligations.

40 Records interfaces and revision control

40.1 The controlled record set shall include vehicle authority, intake identity and mass, hazards, depollution tasks, pyrotechnic disposition, reusable-part decisions, pre-processing release, material outputs and downstream evidence. Retention shall follow the IAF Documents and Records Guide and applicable obligations, with defined access, legal holds and authorised disposal.

40.2 This manual connects to the IAF Quality Manual, industrial safety, incident response, sustainability, supplier controls and business continuity documents. Remanufacturing cores transfer to IAF-MAN-RMC-001 with their actual condition and history. Batteries proposed for stationary reuse transfer to IAF-MAN-SLB-001 without an automatic suitability claim.

40.3 Revisions shall follow the competent IAF authority and document-control process. Notices shall identify changed requirements and transition actions. Operating organisations shall assess site permissions, equipment, competence and reporting effects, and record actual adoption dates. Publication shall not be represented as proof that every participating facility has implemented the requirements.

40.4 Local supplements shall contain current vehicle-specific procedures, legal identifiers, technical settings and site arrangements. They shall remain controlled and available to authorised users. Historical instructions shall be retained for traceability while obsolete operational copies are removed from use, especially where changed vehicle technologies alter the safe treatment route.

Annex A Facility adoption and treatment scope

Complete for each facility and maintain controlled supplements for actual permissions and vehicle-specific methods.

Record field	Required entry and decision
Site identity	Record legal entity, site address, accountable director, manual revision and actual adoption date.
Vehicle scope	List accepted propulsion types, vehicle classes, damage conditions and expressly excluded categories.

Record field	Required entry and decision
Process scope	Identify collection, depollution, specialist hazards, dismantling, crushing, shredding and outsourced stages.
Permissions	Link current operating, environmental, transport and specialist requirements with applicability dates and responsible interpretations.
Infrastructure	Verify surfaces, drainage, storage, lifting, extraction, protective systems and emergency access.
Competence	Name authorised specialists, operators, reviewers and deputies with task boundaries.
Downstream capacity	Identify qualified routes for batteries, fluids, pyrotechnics, reusable parts, material fractions and residues.
Activation	Record readiness evidence, restrictions, responsible approvals and the process for reviewing changes.

A new vehicle technology or treatment method shall receive an explicit scope assessment before acceptance.

Annex B Vehicle intake and treatment traveller

Use one traveller per vehicle, with links to batch records only where individual status remains recoverable.

Record field	Required entry and decision
Authority and identity	Record source, lawful transfer or destruction authority, vehicle identifiers and any unresolved discrepancy.
Mass record	Enter measured gross, tare and net quantities, units, scale identity and foreign or missing material affecting the boundary.
Condition and hazards	Record propulsion, damage, contamination, batteries, pressure systems, pyrotechnics and unknown conditions.
Eligibility decision	Identify permitted work, storage restrictions, specialist referrals and the accepting person.
Depollution completion	Link each required system to the operator, method revision, result and recovered output.
Selective dismantling	List reusable parts, remanufacturing cores and specialist fractions with their actual status and destination.
Mechanical processing release	Record independent or designated competent reconciliation of hazards and the authorised next process.
Final reconciliation	Link material outputs, downstream evidence, corrections and the final vehicle record status.

A not-applicable entry requires a supported reason. Missing evidence shall not be treated as evidence that another operator completed the task.

Annex C Fluid recovery and storage log

Create one line for each vehicle system or controlled recovery batch. Add actual dates, operator, container identity and measured quantity to the local register.

Stream	Required control record	Release check
Fuel	Identified fuel or uncertainty; approved recovery method; compatible receiving container; actual quantity basis.	System completion verified; residual condition addressed; no unresolved flammable contents.
Lubricating oils	Systems included; method; container and classification; filters or retained fluid-bearing items.	Required systems completed and residual leakage controlled.
Hydraulic fluids	Brake, clutch or other applicable systems; segregation and receiving route.	No unsupported assumption that one reservoir represents the whole circuit.
Coolant and washer fluids	Identified circuits, recovered quantities, compatible storage and drainage protection.	Inaccessible or damaged sections have a documented disposition.
Exhaust-treatment liquids	Specific system, compatible collection and protection against uncontrolled discharge.	Treatment and storage route confirmed without reliance on an oil separator.
Refrigerant	Identity or uncertainty, competent operator, suitable equipment, container and recovery result.	No intentional venting; uncertain mixtures remain segregated.
Unknown mixture	Source, observed condition, hold status and competent classification.	Approved treatment route established before transfer or mixing.

Quantities shall have a clear measurement basis. Container transfers do not create additional recovered mass.

Annex D Pyrotechnic inventory and disposition record

This form controls authorisation and verification. Device-specific activation parameters remain in the restricted specialist work instruction.

Record field	Required entry and decision
Vehicle inventory	List expected airbags, pretensioners and other pyrotechnic devices using current vehicle-specific information.
Observed status	Record location, identity where available, deployed, undeployed, damaged, missing or uncertain condition.
Selected route	Identify controlled removal for specialist treatment or permitted controlled deployment and the technical basis.
Authorisation	Record specialist competence, procedure revision, equipment suitability and site permission for the selected route.
Work readiness	Confirm approved work area, access control, coordination and emergency arrangements before treatment.

Record field	Required entry and decision
Outcome	Record the verified result for every device. Unsuccessful or uncertain results remain on hold.
Removed devices	Link storage identity, remaining hazards, transporter and qualified receiving facility.
Reconciliation	Compare expected devices with verified outcomes and transfers; record the reviewer and any block on crushing or shredding.

Do not probe, dismantle or apply improvised electrical sources to a device. Unresolved pyrotechnics shall prevent unrestricted mechanical processing.

Annex E Pre processing release checklist

The designated competent reviewer shall compare the physical vehicle or load with the supporting records before crushing or shredding.

Record field	Required entry and decision
Identity	Confirm vehicle or batch identity, source travellers and permitted receiving process.
Electrical energy	Verify disposition of relevant low-voltage batteries, traction batteries and other stored-energy systems.
Liquids	Confirm all required fuel, oil, hydraulic, coolant, washer and other liquid systems were addressed.
Refrigerants and gas	Verify refrigerant recovery and the specialist disposition of pressure or gas-fuel systems.
Pyrotechnics	Reconcile the complete inventory with verified treatment or specialist transfers.
Other hazards	Check hazardous components, foreign objects, contamination and late-discovered conditions.
Physical agreement	Inspect the actual shell or load for inconsistency with records; hold changed or uncertain loads.
Release	Record authoriser, date, destination, restrictions and the rule for withdrawing release if new information appears.

A signed checklist does not excuse the processing operator from stopping when a new hazard is observed.

Annex F Worked mass balance and recovery calculation

Fictional closed cohort with 100000 kg of eligible vehicle input, no opening or closing stock, and confirmed final destinations. Apply the actual programme boundary in real reporting.

Outcome or measure	Mass or calculation	Meaning
Qualifying component reuse	10000 kg	Accepted reuse outcome supported by records, counted once.
Confirmed material recycling	75000 kg	Actual credited material-recycling outcome within the defined method.
Qualifying other recovery	10000 kg	In this example, qualifying energy recovery; it is not material recycling.
Final disposal	5000 kg	A separate outcome that receives no recovery credit.
Balance	$10000 + 75000 + 10000 + 5000 = 100000$ kg	All input mass is reconciled; the example contains no pending stock.
Reuse and recycling	$(10000 + 75000) / 100000 \times 100 = 85$ percent	This result is distinct from material recycling alone, which is 75 percent.
Reuse and recovery	$(10000 + 75000 + 10000) / 100000 \times 100 = 95$ percent	This cannot be described as 95 percent material recycling.
Stricter ambition	To reach 95 percent reuse plus recycling on this boundary, another 10000 kg must move from other outcomes to qualifying reuse or recycling.	For 95 percent material recycling alone, the gap is 20000 kg. Feasibility must be demonstrated, not assumed.

If downstream treatment is unconfirmed, retain it as pending under the applicable method. Do not force the balance by assigning unexplained mass to recycling.

Annex G Downstream custody and outcome verification

Complete for each material stream and receiving route, with shipment-level links where necessary.

Record field	Required entry and decision
Material identity	State actual composition, contamination, classification, condition and the applicable output specification.
Receiver qualification	Verify legal entity, actual treatment site, permissions and capability for this material.
Shipment	Record consignment, net mass, measurement basis, transporter, date and custody transfers.
Receipt	Obtain matched quantity and condition confirmation; investigate differences and rejections.

Record field	Required entry and decision
Treatment chain	Identify intermediaries and final processors, including route changes requiring approval.
Outcome evidence	Record credited reuse, recycling, other recovery, disposal and residues under the defined boundary.
Claim review	Check for duplicate credit, unsupported yield assumptions and missing final evidence.
Closure	Approve the reported outcome or retain a pending status; record corrections and affected reports.

A generic recycling certificate shall not establish a shipment-specific outcome unless its scope, quantities and traceability support that conclusion.

Annex H Audit and incomplete depollution exercise

Use a controlled fictional discrepancy and safe observation. Do not introduce a hazardous item into a live processing load.

Record field	Required entry and decision
Initial scenario	A shell is marked released, but its pyrotechnic inventory and battery-removal records are incomplete.
Immediate decision	Demonstrate the hold, access restriction and notification required before the shell reaches the machine.
Evidence retrieval	Find vehicle identity, technical information, task records, operators and any transferred hazardous components.
Population review	Identify other vehicles released using the same incomplete checklist or operator practice.
Downstream check	Determine whether any affected loads already left the site and contact the responsible receivers through the authorised route.
Cause review	Assess instruction, training, workload, system permissions and the reliability of not-applicable entries.
Corrective action	Assign process corrections and verify both physical controls and record completeness.
Effectiveness	Repeat the release review on new samples and demonstrate that the same omission is detected before processing.

Measure reliable control and complete traceability, not merely the time taken to sign a replacement checklist.