Servicing, RPO & Debris Posture Readiness (ESA 2026 / NASA ODPO Baseline)

Pillar: Valley & Orbital Readiness | **Basis:** Batch 9 Servicing, Constellations & Debris | **Primary Source:** ESA Space Debris Office (2026) / NASA ODPO | **As Of:** 2026-11-16

Washington servicing, habitat, OTV, and constellation operators must base mission-assurance and debris-risk posture on dated ESA 2026 and NASA ODPO baselines while separating demonstrated RPO missions from 2026–2027 roadmaps.

Readiness Checklist & Corpus Traceability

• **Anchor Risk Models to Dated Debris Counts:** Cite ESA 2026 Issue 10 (end 2025: `~46,110` tracked, `~16,100` active, `~1.5M` 1–10 cm, `~230M` 1 mm–1 cm) and NASA ODPO (`>34,000` SSN, `>100M` 1 mm–1 cm) per ESA & NASA Debris Counts (2026).

• **Design for Untrackable 1 mm–10 cm Risk:** Incorporate shielding/redundancy where SSN tracking stops per Untrackable 1 mm-10 cm Risk.

• **Automate Conjunction & COLA:** Establish Space-Track / 18th SDS screening and maneuver authority per Conjunction & Collision Avoidance.

• **Separate Demonstrated vs. Roadmap Servicing:** Distinguish Starfish Space's demonstrated `Otter Pup 2`/`Remora` missions from `Otter` 2026–2027, Gravitics `StarMax`, and Portal `Supernova` roadmaps per Starfish Otter Servicing, Gravitics StarMax, and WA OTV Disposal.

Servicing, Constellation & Debris Readiness Checklist

Operational Layer	Readiness Check	Corpus Source
Debris Baseline	Use dated ESA 2026 / NASA ODPO figures	#2352 Debris 2026
Untrackable Risk	Whipple/shielding & passivation for 1mm-10cm	#2355 Untrackable
Conjunction / COLA	24/7 CDM ingestion & maneuver thresholds	#2346 Conjunction
RPO / Servicing	Docking interfaces & unprepared-client safety	#2328 RPO Clients
Constellation Ops	SpaceX / Amazon Leo / BlackSky benchmarks	#2337 SpaceX

Operator Execution & Boundary Notes

• Evaluate Life Extension vs. ADR on propellant-budget and FCC license-extension economics rather than generic ESG claims.

• Include Amazon Leo Compliance and SpaceX Redmond Disposal as reference architectures for multi-shell LEO fleets.

• Refresh debris population citations annually when ESA publishes subsequent Space Environment Reports.

Corpus Source Pieces & Primary Authorities

• **ESA & NASA Debris Counts (2026):** https://bcesg.org/wa-space-orbital-esa-nasa-debris-counts-2026/

• **Untrackable 1 mm-10 cm Debris Risk:** https://bcesg.org/wa-space-orbital-mm-to-cm-untracked-risk/

• **Conjunction Assessment & COLA:** https://bcesg.org/wa-space-orbital-conjunction-collision-avoidance/

• **Starfish Space Otter Servicing:** https://bcesg.org/wa-space-orbital-starfish-space-otter-servicing/

• **RPO with Unprepared Satellites:** https://bcesg.org/wa-space-orbital-rpo-docking-unprepared-clients/

• **ESA Space Debris Office:** https://www.esa.int/Space_Safety/Space_Debris

• **NASA ODPO Quarterly News:** https://orbitaldebris.jsc.nasa.gov/quarterly-news/

• **Starfish Space:** https://www.starfishspace.com/

• **Gravitics:** https://www.gravitics.com/

Provenance Note: Synthesized from BC ESG Batch 9 (#2322–#2355). Preserves ESA 2026 (end 2025) and NASA ODPO baselines.