

1. Maintenance Guide — Extensive Green Roof

(Sedum-dominant, 3 – 6 in / 75 – 150 mm substrate, $\leq 120 \text{ kg m}^2$ saturated load)

1. The 90-Minute Rule

For every **100 m² ($\approx 1,075 \text{ ft}^2$)** of extensive roof, plan on **90 minutes of hands-on care per season** once the vegetation is established (after Year 1). Most tasks are visual checks, so bring a notebook or phone camera and stroll the roof four times a year.

2. Seasonal Task Calendar

Season	Core Tasks	Time Required	Key Supplies
Spring (Mar – Apr)	<ul style="list-style-type: none">• Inspect membrane edges & flashings• Remove winter debris from outlets & gutters• Spot-weed roots $\geq 3 \text{ cm}$• Top-dress bare patches with sedum cuttings	30 – 45 min	Knee pads, hand fork, 6 L sedum cuttings, brush
Summer (Jun – Aug)	<ul style="list-style-type: none">• Check drought stress (sedum turns red = OK)• Irrigate only after 3 wks without 25 mm rain• Monitor for aphids; hose off if clustered	15 – 30 min	Hose with soft-spray nozzle
Autumn (Sep – Oct)	<ul style="list-style-type: none">• Apply slow-release fertiliser (N-P-K $\approx 5\text{-}5\text{-}5$) at 50 g m^2• Remove fallen leaves from drain collars• Reseed gaps ($> 150 \text{ mm } \varnothing$) with sedum/grass mix	30 – 40 min	1 kg slow-release feed per 20 m^2 , leaf rake
Winter (Dec – Jan)	<ul style="list-style-type: none">• Post-storm check for scoured substrate or wind uplift• Verify snow loads not blocking overflow scuppers	10 – 20 min	Torch/flashlight, broom

Tip — Set calendar reminders at equinoxes & solstices; you'll never forget a visit.

3. Routine Checks (Quarterly)

1. **Drainage outlets & inspection chambers** – clear of moss, roots, or leaves.
 2. **Substrate depth** – maintain ≥ 75 mm; rake washed-down material back up-slope.
 3. **Vegetation cover** – aim for ≥ 80 % live cover; infill bare spots early to suppress weeds.
 4. **Edge & fire-break gravel** – keep 300 mm strip free of growth for fire code compliance.
 5. **Parapet & membrane integrity** – look for punctures, standing water, or UV cracks.
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4. Irrigation Guidelines

Condition	Action
< 25 mm rainfall in 21 days <i>and</i> daytime temp > 24 °C (75 °F)	Hand-water or run drip line 10–15 L m² once, preferably pre-dawn.
Newly installed roof (Months 0–3)	Water lightly every 3–4 days if no rain to help root establishment.
Normal UK/NE-US summer	No irrigation needed; sedum tolerates reddening/dormancy.

Avoid over-watering—excess moisture encourages moss and shallow rooting.

5. Fertilising

Extensive roofs thrive on low nutrients.

- **Frequency:** Once a year in early autumn.
- **Product:** Slow-release granular fertiliser, N–P–K between 3-5 %.
- **Rate:** 50 g m² (\approx 1.5 oz 20 ft²). Broadcast by hand on a wind-still day, then water lightly.

6. Weed & Pest Control

Issue	Remedy
Tree seedlings (birch, willow)	Remove by hand <i>before</i> woody stems lignify.
Grass weeds invading sedum	Spot-spray acetic-acid herbicide or pull after rain.
Aphids on stonecrop flowers	Hose off with water jet; beneficial ladybirds usually follow.
Moss domination in shaded corners	Lightly scarify and top-dress with 10 mm fresh substrate and sedum cuttings.

Chemical herbicides are seldom needed and may void membrane warranties.

7. Substrate Top-Ups & Repairs

- **Top-up threshold:** If depth < 60 mm anywhere, add lightweight extensive mix.
 - **Erosion gullies:** Brush substrate upslope, then pin down a biodegradable jute mat until re-vegetated.
 - **Membrane puncture:** Mark with spray paint, photograph, patch with compatible kit or call installer.
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8. Post-Extreme-Weather Protocol

1. **After wind gusts > 90 km h (56 mph)** – check for lifted mats or loose edge trim.
 2. **After hail ≥ 20 mm (¾ in)** – inspect plants for shredding; damaged sedum re-sprouts.
 3. **After 48 h of standing snow melt** – clear slush from outlets to prevent ice dams.
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9. Safety Essentials

- Use OSHA/Work-at-Height compliant anchors or guardrails.
- Never visit roof alone; carry phone & first-aid kit.
- Wear soft-soled shoes to avoid membrane punctures.
- Keep a 1 m exclusion zone around skylights or fragile deck lights.

10. Record-Keeping

Log Item	Why
Date & duration of each visit	Proves warranty compliance.
Photos of each quadrant	Tracks vegetation health & catch issues early.
Fertiliser & substrate weights	Optimises future orders.
Weather notes (drought, storms)	Correlates with performance issues.

11. Annual Budget Snapshot (per 100 m²)

Item	Quantity	Cost
Slow-release fertiliser	5 kg	£20 / \$25
Substrate top-up (year 5 onward)	300 L	£60 / \$70
Hand tools & PPE depreciation	–	£10 / \$12
Total		≈ £90 / \$107 per year

Quick-Reference Maintenance Cheat Sheet

- **4 visits / year** → Spring, Summer, Autumn, Winter.
- **Water only after 3 wks drought.**

- Fertilise once in autumn.
- Target 80 % plant cover & 75 mm substrate.
- Log every inspection for warranties.

Follow this routine and your extensive green roof should flourish for **40+ years** with minimal cost, all while delivering insulation, biodiversity, and a splash of year-round colour overhead. Happy tending! 🌿



2. Maintenance Guide — Intensive (Roof-Garden) Green Roof



(Deep substrate ≥ 200 mm / 8 in, 300 – 1 000 kg m² saturated load, supports lawns, shrubs & small trees)

1. Workload at a Glance

Expect **4 – 6 hours per 100 m² ($\approx 1\,075$ ft²) **each month**—similar to a small ground-level garden. Most roofs hire a gardener for two half-days per month during the growing season.

2. Seasonal Task Calendar

Season	Core Tasks	Time (per 100 m ²)	Key Gear
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Spring (Mar – Apr)	<ul style="list-style-type: none"> • Restart irrigation; flush & pressure-test lines • Apply slow-release fertiliser (N-P-K 10-5-5) 75 g m² • Prune winter damage from shrubs/trees • Top-dress beds with 20 mm compost 	2 h	Pruners, soil probe, 8 kg fertiliser
Summer (May – Aug)	<ul style="list-style-type: none"> • Irrigate 2–3 × week to maintain 40–60 % soil moisture • Weekly weed & pest scout; treat aphids, spider mites • Mow lawn areas every 10–14 days • Monthly liquid feed high-nitrogen for veg/herbs 	6 h	Moisture meter, mower, backpack sprayer
Autumn (Sep – Oct)	<ul style="list-style-type: none"> • Collect fallen leaves; clear drains • Soil test (pH, N-P-K) and correct deficiencies • Apply high-K fertiliser (3-5-8) 50 g m² • Re-edge beds & refresh mulch 	3 h	Leaf blower, test kit, edging spade
Winter (Nov – Feb)	<ul style="list-style-type: none"> • Shut down & drain irrigation; insulate exposed valves • Inspect root barriers, parapets, roof outlets after storms • Prune trees while dormant; stake new plantings • Monitor snow load > 150 mm (6 in) and clear paths 	1 – 2 h	Loppers, snow shovel, torch

3. Weekly / Monthly Routine Checks

Frequency	What to Inspect	Acceptable Range / Action
Weekly (growing season)	Soil-moisture probe at 100 mm depth	40 – 60 % VWC; adjust irrigation ±10 %
	Walkways, pavers, seating	Trip-hazard free; re-level loose slabs

Monthly	Drainage outlets & inspection chambers	Clear of roots, leaves, sediment
	Structural supports under planters/benches	No sagging or standing water
	Tree anchors & guy wires	Taut but not bark-cutting

4. Irrigation Guidelines

Roof Use	Target Watering	Delivery Method
Ornamental lawn / shrubs	25 – 35 mm water week (≈1 in)	Pop-up rotors or drip grid
Vegetable beds	35 – 45 mm week	Drip lines 200 mm spacing
Newly planted area (first 3 months)	Daily 5 mm until roots establish	Drip or hand wand

*Add **rain & moisture sensors** to automatically skip cycles after ≥ 10 mm rainfall.*

5. Fertilising Schedule

Timing	Product	Rate
Early Spring	Slow-release 10-5-5	75 g m ²
Mid-Summer (veg)	Liquid 15-5-5	100 ml m ² (diluted)
Early Autumn	Slow-release 3-5-8	50 g m ²

Run a lab soil test **every 2 years**; adjust micronutrients (Fe, Mg, Ca) as advised.

6. Plant Care & Pruning

- **Trees (< 4 m high)** – Annual crown thinning; remove crossing limbs. Hire an arborist every 3 yrs to check root anchorage.

- **Shrubs & perennials** – Spring rejuvenation prune; dead-head spent blooms fortnightly to extend flowering.
- **Edibles** – Succession-sow greens; rotate beds yearly to manage soil pathogens.

Mulch 50 mm woodchips or 30 mm compost keeps moisture and suppresses weeds.

7. Soil Management & Aeration

Issue	Remedy
Compaction from foot traffic	Core-aerate paths every 2 yrs; backfill with sand-compost mix
Settling > 20 mm	Top-dress with matching lightweight substrate; rake level
pH drift (< 5.5 or > 7.5)	Incorporate lime or sulphur per test recommendations

8. Drainage, Waterproofing & Structural Checks

- **Quarterly**: Lift one inspection paver—confirm no standing water under drainage layer.
 - **Post-storm**: Check parapet scuppers, overflow scuppers, and gravel borders.
 - **Annual**: Infra-red or moisture-scan membrane (many warranties require this). Any puncture → document & patch with manufacturer kit.
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9. Pest & Disease Strategy

1. **Monitor** – Yellow sticky cards for flying pests.
 2. **Cultural control** – Space plants for airflow, remove diseased leaves immediately.
 3. **Biologicals** – Release ladybirds, parasitic wasps, nematodes as needed.
 4. **Chemicals** – Spot-treat only, choose membrane-safe formulations, log batch & location.
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10. Safety Essentials

- Guardrails or lifeline anchors are **mandatory** for routine work.
- Non-slip footwear; spread load boards if using heavy wheelbarrows.
- Store fertiliser & chemicals in roof-rated, weatherproof lockers.
- Two-person rule for ladder or over-edge tasks.

11. Record-Keeping

Log	Details
Irrigation runtimes & rainfall	Optimize water budget; prove storm-water capture
Fertiliser/pesticide batch & rate	Audit trail for organic certification
Structural/ membrane photos	Support warranty claims
Plant inventory & bloom dates	Track biodiversity KPIs

Digital logs (e.g., Airtable or Google Sheets) simplify trend analysis.

12. Annual Budget Snapshot (per 100 m²)

Item	Quantity	Cost
Slow-release fertiliser	10 kg	£45 / \$55
Liquid feeds & micronutrients	—	£35 / \$45
Mulch / compost top-dress	2 m ³	£80 / \$95
Irrigation maintenance	4 filter sets	£30 / \$35
Gardener labour (6 h × 9 mo)	54 h	£1 080 / \$1 200
Total		≈ £1 270 / \$1 430 per year

Savings: Roof-garden amenity value and extended membrane life often exceed O&M costs when factored into property valuation.

Quick-Reference Cheat Sheet

- **4–6 h maintenance per 100 m² every month.**
- **Irrigate** to keep soil moisture 40–60 % (2–3 × week in summer).
- **Fertilise twice yearly** + monthly liquid feeds for edibles.
- **Inspect drainage & membrane quarterly**; photo-log everything.
- **Prune trees/shrubs annually**, mow lawns bi-weekly.
- **Mulch & weed control** each spring and autumn.

Stick to this routine and your intensive green roof will thrive as a vibrant, multi-layered rooftop landscape—delivering biodiversity, community space, and year-round visual appeal for decades. Happy gardening in the sky! 🌳🏙️

