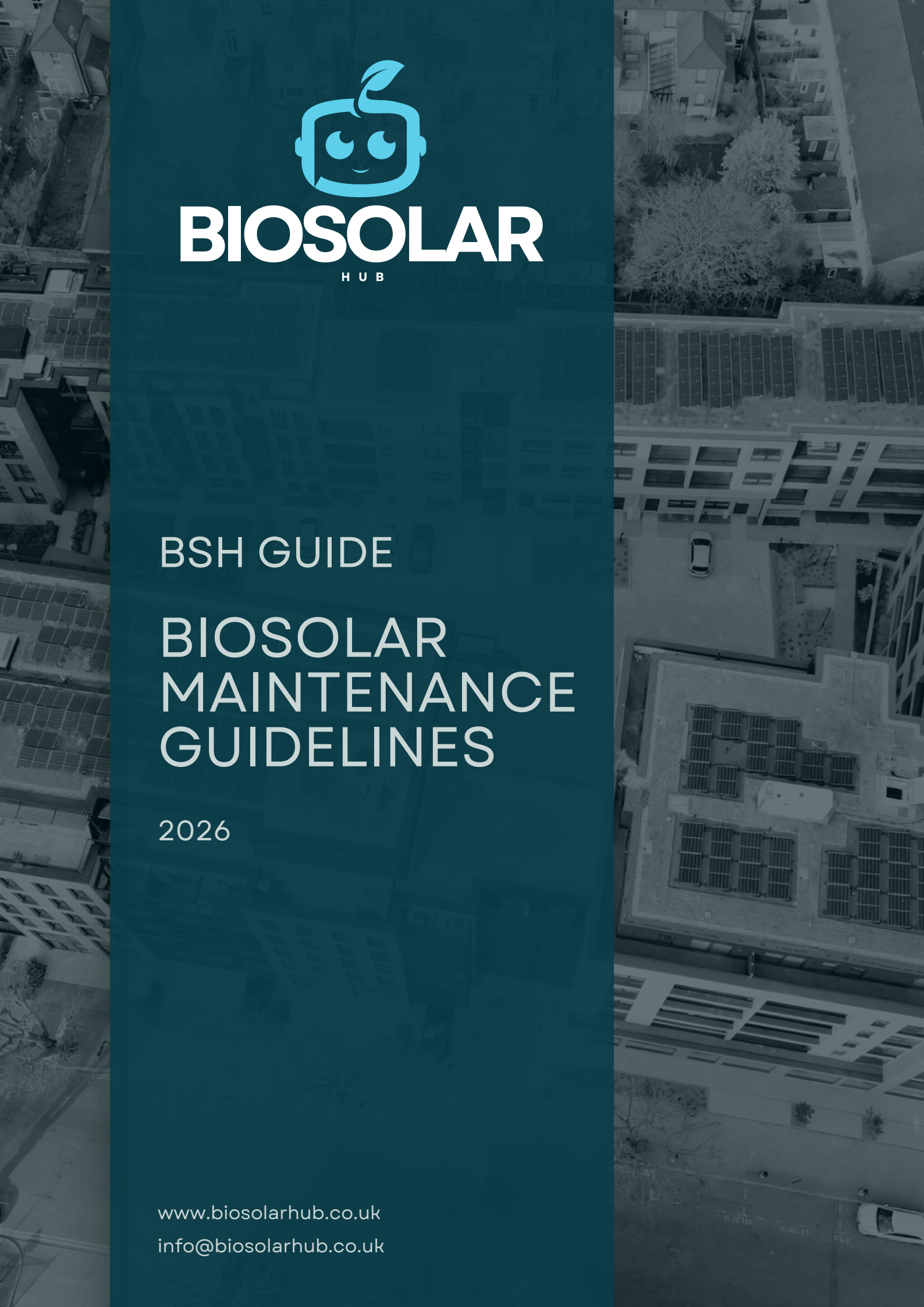

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BSH GUIDE

BIOSOLAR MAINTENANCE GUIDELINES

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www.biosolarhub.co.uk
info@biosolarhub.co.uk

BIOSOLAR MAINTENANCE GUIDELINES

This document provides general guidance for maintaining biosolar roof systems. It should be used alongside project-specific information, manufacturer instructions and recognised UK best-practice guidance such as that published by GRO and MCS. Final decisions on maintenance must always reflect site conditions and competent professional advice.

1. INTRODUCTION & SCOPE

This manual sets out the maintenance procedures required to keep an integrated biosolar roof performing safely and effectively. Unlike a conventional PV system or a standalone green roof, a biosolar roof operates as a combined ecological and electrical system. Both elements must be maintained holistically.

This document is intended for:

- Building owners and FM teams
- Green roof maintenance contractors
- Solar PV maintenance providers
- Main contractors and asset managers

It outlines standard maintenance tasks, frequencies, responsibilities and inspection methods, as well as long-term performance expectations.

2. SYSTEM OVERVIEW

2. System Overview	
An integrated biosolar roof typically consists of:	Maintenance ensures the system continues to operate as designed:
PV modules	Vegetation supports ecological outcomes and protects the roof build-up
Mounting frames embedded within the green roof build-up	Substrate provides ballast and stabilises the PV system
Substrate providing ballast and ecological medium	PV modules generate energy efficiently
Vegetation (sedum, wildflower, biodiverse mixes)	Drainage prevents waterlogging and structural risks
Drainage and protection layers	Access routes allow safe ongoing inspections
Firebreak zones and access routes	
Cable management pathways	
Inverters, isolators and electrical hardware	

3.ROLES, RESPONSIBILITIES & COMPLIANCE FRAMEWORK

3:1 PV Maintenance (MCS-aligned)

Performed by competent solar professionals. Includes:

- Module inspection
- Cleaning where appropriate
- DC Cable checks
- Isolation and inverter inspection
- Torque testing of module clamps
- Performance data review

3:2 Green Roof Maintenance (aligned)

Performed by trained green roof or landscape practitioners.
Includes:

- Vegetation management
- Weed control and plant health assessment
- Substrate condition monitoring
- Firebreak checks
- Drainage inspections

3.3 Building Owner / FM Responsibilities

- Ensuring safe access
- Appointing competent contractors
- Maintaining a maintenance record
- Reporting any observed issues
- Planning seasonal or annual visits as required based on size and type of system

3.4 Coordination Requirement

Because the PV array and green roof influence each other:

A coordinated maintenance plan covering both the solar installation and the green roof should be implemented to ensure long-term performance of the complete biosolar system.

4. MAINTENANCE FREQUENCIES & VISIT PLANNINGS

Integrated biosolar roofs require maintenance at intervals suited to their size, planting type and system complexity. Frequency must be adapted based on roof size, planting type and the roof's performance.

Typical guidance:

Establishment Phase (Year 1):	Ongoing Years (Typical):	Reactive Visits:
3-4 visits	2–3 visits per year for standard extensive systems	After storms or heavy winds
Additional visits after extreme weather	Quarterly for large, complex or biodiverse systems	After roof works by other trades
		If monitoring data indicates reduced PV output

5. SEASONAL MAINTENANCE TASKS

5:1 Spring (March - May)

Objective: Establish stable growth and prepare for summer performance.

Inspect vegetation for winter die-back; replant or reseed sparse areas.
Remove early-season weeds.
Check substrate levels with a depth probe, especially around mounting frames.
Clear outlets, gutters and retention chambers.
Verify firebreaks remain free of substrate and vegetation.
Perform a PV visual inspection (module condition, clamps, cable runs).

5:2 Summer (June - August)

Objective: Optimise plant health and uninterrupted solar generation.
Check vegetation for drought stress and ensure irrigation where needed
Trim growth around panels to maintain airflow and reduce shading.
Assess species diversity where biodiversity outcomes apply.
Inspect cables for UV exposure or uplift from wind.
Confirm modules remain clean and unobstructed.

5:3 Autumn (September - November)

Objective: Protect system stability during adverse weather.
Remove leaf fall and seasonal debris.
Inspect drainage and firebreaks thoroughly.
Check for substrate erosion or wash-out after heavy rain.
Inspect clamps and rails following thermal expansion cycles.
Review any vegetation encroaching into access routes.

5:4 Winter (December - February)

Objective: Protect system stability during adverse weather.
Conduct post-storm inspections to ensure ballast and vegetation stability.
Check outlets and gutters for ice or blockage.
Confirm module alignment after snow or wind.
Avoid walking on frozen vegetation or waterlogged substrate.

6. ANNUAL INSPECTION AND REPORTING

ANNUAL INSPECTION AND REPORTING

A structured annual review is essential:

- [ ] Record substrate depth in multiple sample areas.
- [ ] Review drainage system (inspection chambers, outlets, retention zones).
- [ ] Conduct firebreak compliance check.
- [ ] Inspect vegetation species diversity and health.
- [ ] Perform full PV mechanical and electrical inspection:
  - [ ] DC cable condition
  - [ ] Clamp torque
  - [ ] Hotspot check (visual or infrared)
  - [ ] Isolation devices
  - [ ] Inverter readings
- [ ] Assess roof access and safety provisions.
- [ ] Produce an annual maintenance report.

7. Vegetation Care Procedures

Detailed vegetation tasks:
Trim or manage vegetation to avoid shading modules or restricting airflow.
Reseed bare areas with approved mixes.
Remove invasive species.
Maintain species balance for biodiversity targets.
Avoid nutrient overload (no generic fertilisers unless specified).
Under-module vegetation should include species tolerant of shade and lower moisture.

8. Substrate & Ballast Integrity Checks

Procedures include:
Sample substrate depth using probes.
Check for compaction from foot traffic.
Identify erosion or gaps around frames.
Re-level uneven areas.
Confirm ballast distribution after storms.
Substrate movement can compromise wind-uplift resistance.

9. Drainage & Firebreak Inspections

Tasks include:

- Lift inspection chambers and confirm water movement.
- Remove sediment or roots obstructing flow.
- Ensure gravel firebreaks remain clean, continuous and vegetation-free.
- Verify fleece or substrate has not bridged fire zones.
- Maintaining drainage is critical for both PV safety and waterproofing performance.

11. Access, Safety Zones & Risk Controls

Always follow site-specific risk assessments.

- Keep access routes open and unobstructed year-round.
- Avoid compressing vegetation or substrate when moving equipment.
- Maintain safe working distances from roof edges.
- Use appropriate PPE and fall-protection measures.

13. Maintenance Records & Templates

Good documentation protects warranties and ensures consistent performance.

- Visit log (date, contractor, tasks completed)
- Seasonal task checklist
- Substrate depth log
- Drainage inspection form
- PV inspection checklist
- Annual system report summary

10. PV System Maintenance (MCS Aligned)

Only competent PV professionals should perform these tasks.

- Module cleaning.
- Clamp torque check using correct tools.
- Cable inspection and retightening.
- Isolator operation test.
- Inverter inspection, filter cleaning (if applicable).
- Review of monitoring data for anomalies.

12. Cable Management Protocols

Tasks include:

- Maintain minimum clearance from substrate.
- Avoid contact between cables and vegetation.
- Secure all loose cable loops.
- Allow slack for thermal expansion.
- Elevate cable runs where possible.
- Cable failures are one of the most common biosolar maintenance issues.

14. End-of-Life Considerations

Tasks include:

- PV modules should be recycled through appropriate WEEE routes.
- Vegetation can be renewed or replaced without disturbing the PV system if handled correctly.
- Substrate removal should avoid damaging waterproofing.
- Drainage layers should be inspected if major works occur.

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Powering a sustainable future.