Asset Resilience Starter Kit for **Site Operators**

Moving from reactive to proactive resilience

Why **Asset Resilience** Matters in 2026

Industrial sites now operate in the most challenging conditions ever seen:

Aging assets are **approaching or exceeding design life**.

Flood and climate risks are accelerating and **historical models can't keep pace**.

Regulatory expectations around environmental protection, ESG, and climate adaptation have **tightened significantly**.

Insurance protection gaps mean operators must take a proactive approach to resilience improvements.

Downtime risks now cascade - one small failure can trigger environmental, operational, and financial impacts.

This kit sets out the must know actions for 2026 to stay ahead, protect critical assets, and reduce avoidable operational disruption.

Aging Infrastructure:
What Operators Need to Know

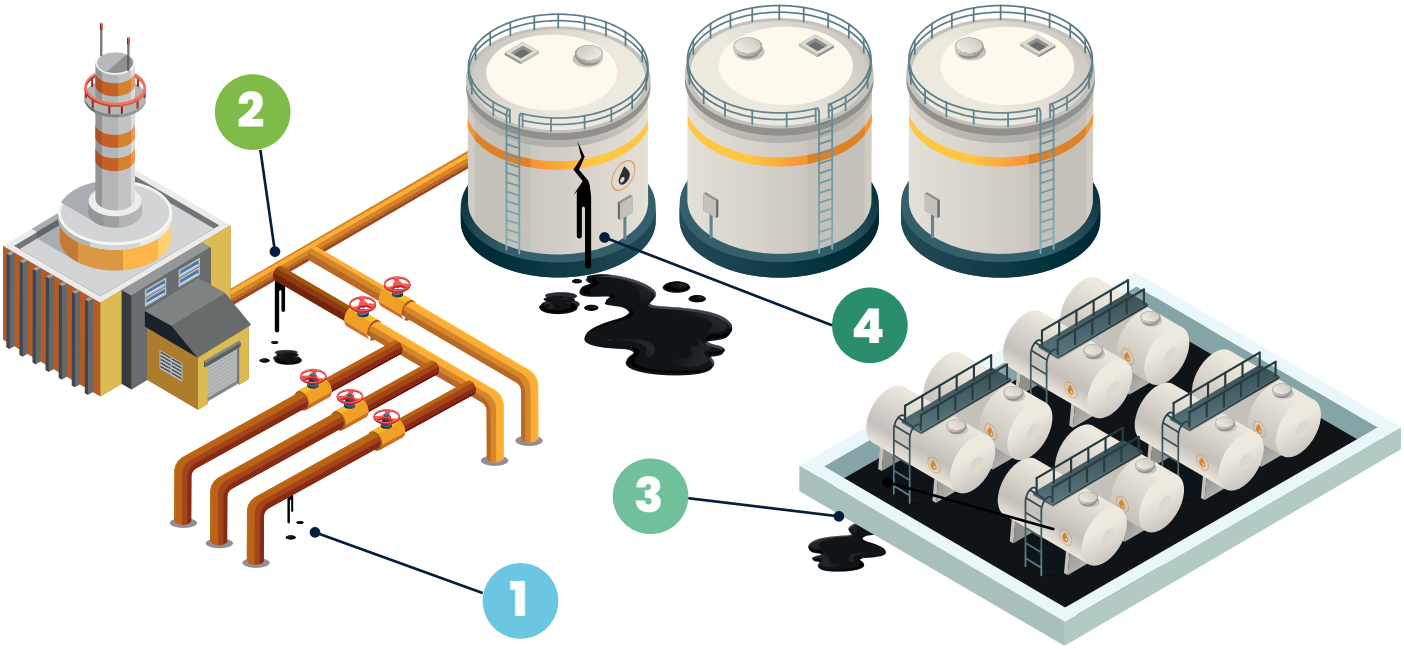
Core risks affecting underground and above ground assets:

1 **Corrosion accelerating** due to coating damage, poor isolation, ground movement, and increasing moisture cycles.

2 **Bi metallic interaction** when new pipe sections join older networks without correct cathodic protection.

3 **Coating failures** in tanks, bunds and chambers, now worsened by extreme heat, UV, freeze thaw cycles, and water ingress.

4 **Hydrocarbon infrastructure degradation**, with leaks posing environmental harm, compliance failures and severe reputational damage.



2026 operator essentials:

✓ Implement predictive and preventative maintenance (not fit and forget).

✓ Apply non-destructive testing (NDT) techniques for early defect detection.

✓ Treat pipeline integrity as a continuous discipline, not a periodic activity.

✓ Use cathodic protection correctly - annual/bi annual surveys, isolation checks, accurate asset mapping.

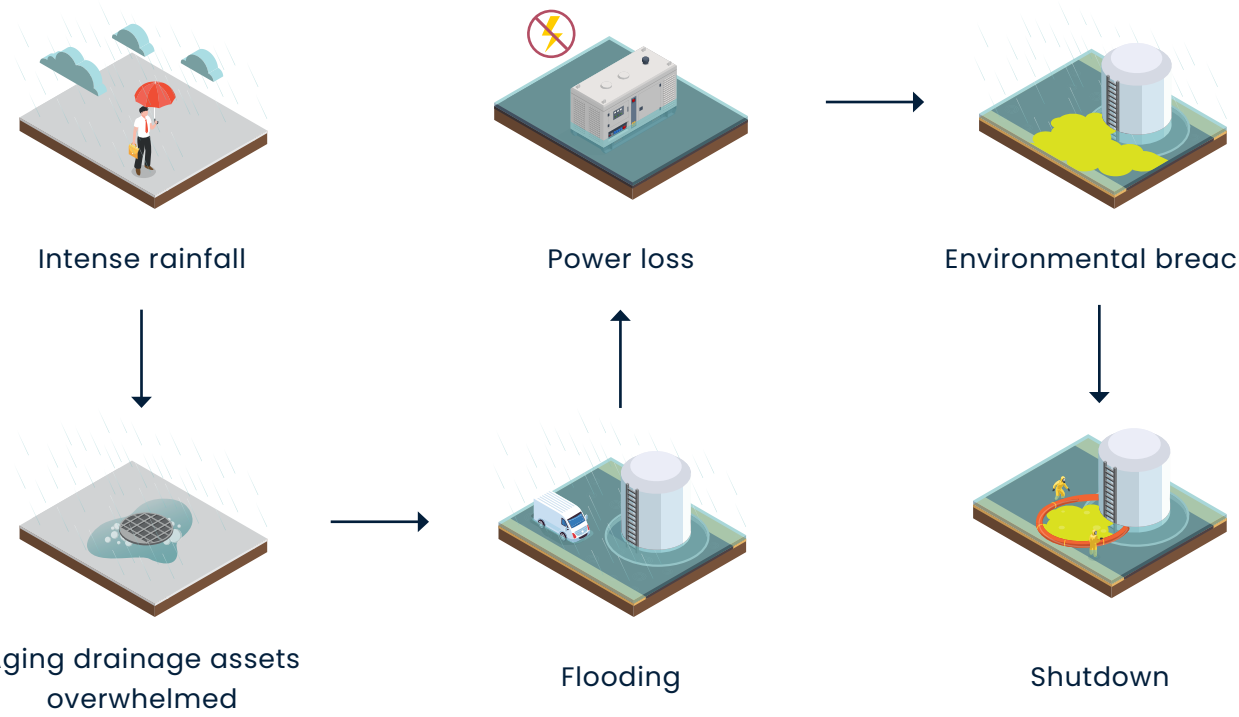
✓ Upgrade coatings to polyurea or high resilience linings for tanks, bunds and chambers.

Flood Resilience:

The New Operational Priority

Industrial sites face rapidly escalating flood risk due to:

1. More intense rainfall events
2. Surface water becoming the #1 cause of flooding
3. Aging drainage assets designed for outdated rainfall assumptions
4. Increased risk of cascading failures (e.g. power loss - environmental breach - shutdown)



2026 operator essentials:

✅ Integrate continuous drainage intelligence (sensors, telemetry, alerts).

✅ Implement nature based solutions to slow and store water.

✅ Treat flood response like a rehearsed operational discipline, not an ad hoc task.

✅ Ensure bunds, valves, pumps and interceptors are upgraded for overtopping, hydrostatic pressure, and high-intensity rainfall.

✅ Adopt a systems wide approach - treat flooding as an interconnected operational threat, not a drainage issue.

Climate Change Risk:
Localised, Asset-Level Insights

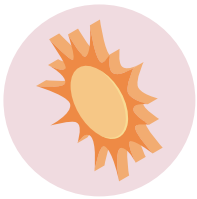
Climate change risks now vary dramatically site by site, even within an operator's portfolio.

In addition to flooding, key hazards that must be assessed per site are:

Extreme heat and temperature spikes

Soil movement (shrink–swell, heave, subsidence)

Storm intensity (wind loading, debris impact)



Drought-driven cooling limitations

Freeze–thaw cycles

Corrosive atmospheres accelerating metal degradation

2026 operator essentials:

✅ Conduct asset-level climate change risk assessments using multiple future climate scenarios.

✅ Integrate findings into maintenance plans, capex planning, emergency response and business continuity planning.

✅ Prepare for combined hazards, not one at a time (e.g., flood + power outage + pollution risk).

✅ Use a 'Swiss Cheese' approach - multiple layers of mitigation, not a single defence.

✅ Maintain compliance with Sustainability Disclosure Regulations (SDR), Corporate Sustainability Reporting Directive (CSRD), Environmental Permitting climate requirements, and updated SuDS regulations.

High-Risk Asset Categories
and How to Manage Them

Five asset classes that are consistently identified as most vulnerable:

1 Interceptors & Drainage Assets

Risks: overload during extreme rainfall, pollution events, temperature degradation, ground movement.

Actions:

- ✓ Increase capacity or add multi stage treatment
- ✓ Real time monitoring and alarms
- ✓ Routine de silting
- ✓ Silt traps and hydrocarbon filters upstream

2 Pump Stations

Risks: flooding, electrical failure, overheating, overload during intense rainfall.

Actions:

- ✓ Raise electricals above flood levels
- ✓ Install flood doors and waterproof cable entries
- ✓ Fit backup generators and heat rated components
- ✓ Add thermal and water-level sensors

3 Bunding & Containment

Risks: cracking, joint failure, overtopping, wind loading, subsurface leaks.

Actions:

- ✓ Increase bund capacity to account for future rainfall projections
- ✓ Adopt improved joint materials and flexible sealants
- ✓ Remove accumulated water frequently
- ✓ Reinforce walls in exposed locations
- ✓ Apply polyurea coatings

4 Storage Tanks

Risks: thermal expansion, storm loading, soil movement, flood flotation, coating breakdown.

Actions:

- ✓ Anchor underground tanks, elevate above-ground tanks
- ✓ Upgrade bunds for increased flood volumes
- ✓ Install real time temperature/pressure monitoring
- ✓ Apply double-skinned linings
- ✓ Routine inspections after heatwaves or storms

5 Pipework Systems

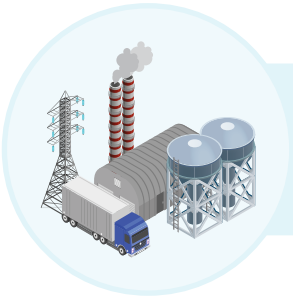
Risks: corrosion, bi-metallic reaction, freeze thaw, flood ingress, flow variability, ground movement, atmospheric corrosion.

Actions:

- ✓ Cathodic protection with proper isolation
- ✓ NDT inspections (UT, intelligent pigging)
- ✓ Flow equalisation and surge management
- ✓ Heat and UV resistant insulation
- ✓ Flexible joints to manage heave/expansion

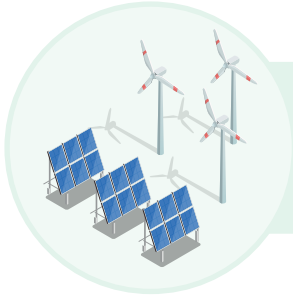
Hydrocarbon Infrastructure:
Safe Transition and Extending Asset Life

Operators must balance:



Maintaining aging hydrocarbon assets

Reducing environmental risks



Supporting a long-term shift to renewables

2026 operator essentials:

- ✅ Use predictive monitoring for leaks, corrosion and pipeline integrity.
- ✅ Conduct cost-benefit analyses for repair vs replacement vs transition investment.
- ✅ Prepare assets for ESG scrutiny and stakeholder expectations.
- ✅ Consider biofuel compatibility where appropriate.
- ✅ Use sustainable maintenance materials and environmentally responsible practices.

The Operator's 2026 **Resilience Checklist**

Asset Type	Proactive Strategy	Timeline
Pipework Systems	Apply cathodic protection with correct isolation Conduct NDT (UT, intelligent pigging) Manage flow surges & equalisation Add heat/UV-resistant insulation Use flexible joints for ground movement	**Visual inspection:** Monthly - Quarterly **Leak detection / integrity checks:** Quarterly **Cathodic protection survey:** Biannual **Full condition NDT inspections:** Based on risk, typically 1–3 years **Continuous integrity discipline:** Ongoing
Storage Tanks (Above & Below Ground)	Anchor underground tanks; elevate above-ground tanks Upgrade bunds for future rainfall Install real-time temp/pressure monitoring Apply double-skinned linings Inspect after heatwaves or storms	**Visual routine check:** Monthly **Secondary Containment check around tanks:** Monthly **Internal inspection (API-653 type):** Event based and every 5-10 years **Underground tank leak monitoring:** Continuous with monthly system checks **Monitoring:** Continuous
Bunding & Containment	Increase capacity for future rainfall Use improved joint materials & flexible sealants Remove accumulated water Reinforce exposed walls Apply polyurea coatings	**Water removal:** After rainfall / routine weekly checks **Visual condition checks:** Monthly **Hydrostatic integrity/capacity validation:** Annually **Structural/joint/coating inspections:** Annually
Pump Stations	Raise electricals above flood levels Install flood doors & waterproof cable entries Fit backup generators Add thermal & water-level sensors	**Routine visual inspection:** Weekly - Monthly **Functional testing of pumps & generators:** Monthly **Sensor checks:** Continuous + quarterly verification **Major mechanical service:** Every 2-5 years
Interceptors & Drainage Assets	Increase capacity or add multistage treatment Install real-time monitoring and alarms Routine desilting Add silt traps & hydrocarbon filters upstream	**Routine visual inspection:** Quarterly **Desilting:** Biannual or more frequent for high-risk sites **Drainage & gullies check:** Monthly - Quarterly **CCTV drainage survey:** Every 3-5 years **Monitoring:** Continuous

The Operator's 2026 **Resilience Checklist**

Hydrocarbon Infrastructure	Predictive monitoring for leaks & corrosion Assess biofuel compatibility Conduct repair vs. replacement cost–benefit analysis Use sustainable materials Prepare for ESG scrutiny	**Routine leak, pressure, and valve checks:** Monthly **Hose/connection checks:** Before each use & monthly **System integrity testing:** Annually **Leak/corrosion monitoring:** Continuous + annual compliance audit **Biofuel compatibility:** Annual or when fuels change
Drainage & Flood Management Systems	Install continuous drainage intelligence Use nature-based solutions Map flood pathways Rehearse flood response regularly Upgrade pumps, valves, interceptors for overtopping	**Routine visual inspection:** Monthly - Quarterly **Grates, channels, culverts clearance:** Quarterly - more during Autumn/Winter **Sump/pit clean out:** Every 6-12 months **Flood defence/system integrity review:** Annually **Flood response drills:** Every 6–12 months **Monitoring:** Continuous
Site-Wide Climate-Exposed Assets	Conduct asset-level climate risk assessments Integrate results into maintenance & capex planning Prepare for combined hazards Use multi-layer ("Swiss Cheese") mitigation	**General visual walkover:** Quarterly **Climate risk assessment:** Annual **Storm damage check:** After severe weather **Structural inspection:** Every 3-5 years **Integration into maintenance:** Ongoing
Coatings & Protective Systems	Upgrade coatings to polyurea or high-resilience linings Inspect for heat, UV and water ingress damage	**Visual inspection for corrosion/peeling:** Annually **Detailed coating assessment:** Every 3-5 years **Reapplication schedule:** Condition-based (approx. 5–10 years)

How **Adler & Allan** Helps You Build Asset Resilience

Building **long term asset resilience** starts with clarity

Our comprehensive site assessments combine engineering expertise, environmental risk analysis, climate scenario insights and asset condition evaluation to pinpoint where your most critical vulnerabilities lie, which assets pose the greatest operational or environmental risks, and which interventions will deliver the strongest impact.

This evidence based view becomes the starting point for smarter maintenance planning, targeted investment, stronger compliance and reduced operational downtime.

Every recommendation is practical, technically robust, and tailored to your site's real-world constraints and operational needs.

Your Partner Across the Whole Resilience Journey

We don't just highlight risks - we help you solve them. With national coverage and multi disciplinary expertise, Adler & Allan is your end to end resilience partner.

We provide expert support and solutions across the whole asset lifecycle from installation and commissioning to long-term adaptation planning. With national coverage and multi disciplinary capability, we help implement the right solutions at the right time, ensuring every resilience investment is justified, effective and aligned to your site's operational realities.

To begin building resilience for 2026 and beyond, **speak to our experts** today.

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