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An Introduction to Water Management

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Water infrastructure is under increasing pressure from:

- Climate change
- Urban expansion
- Population growth
- Frequent storm events
- Aging drainage infrastructure
- Government legislation

Why Water Management Matters

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Poor water management results in:

- Flooding
- Pollution
- Combined sewer overflows
- Environmental damage
- Infrastructure failure
- High maintenance costs

Why Water Management Matters

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Recent trends include:

Intense rainfall
Increase impermeable surface
Higher groundwater levels
Larger development sites
Increased regulations

Current priorities are:

Pollution reduction
Natural flood management
Sustainable Drainage Systems (SuDS)
Storm overflow reduction
Carbon reduction
Whole-life asset management

UK Water Challenges

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UK Water Legislation:

Water Industry Act 2010
Flood and Water Management Act
Environment Act
Highways Act
Planning Policy Framework
Building Regulations
Water Framework Directive
Schedule 3 – mandating all new large developments to incorporate SuDS

Relevant British Standards:

BS EN 1917
BS 5911
Sewers for Adoption
Design for Roads & Bridges

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Rainfall

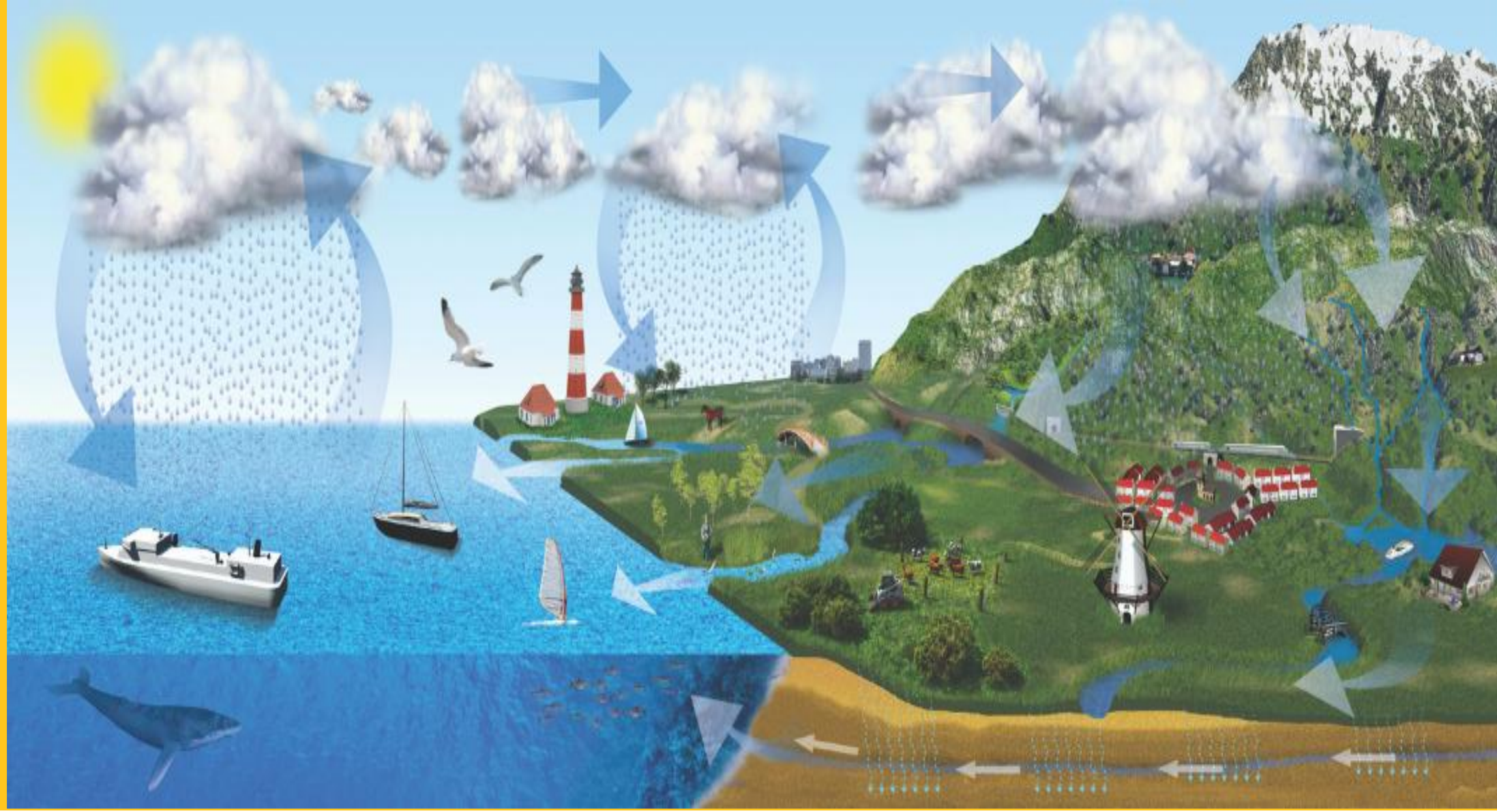
Capture

Treat

Store

Control

Release



The Water Cycle

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Reduce runoff

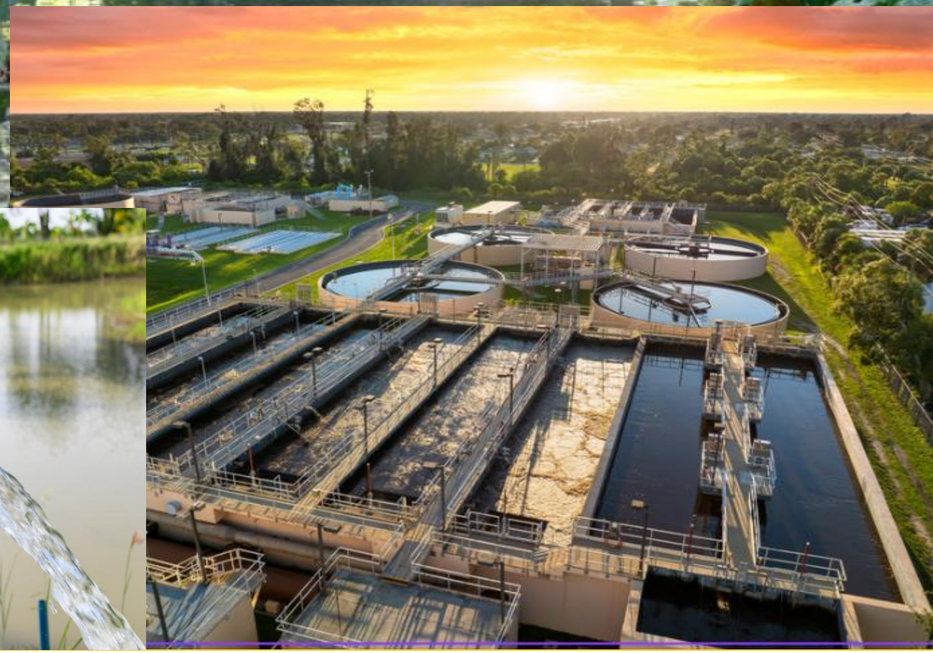
Protect watercourses

Reduce flooding

Improved water quality

Recharge groundwater

Create resilient infrastructure



Surface Water Management

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Swales

Attenuation ponds

Filter drains

Soakaways

Permeable paving

Storage tanks

Flow control chambers

Sustainable Drainage Systems (SuDS)

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Structural strength
Long design life
Prove solutions
Quality – ISO accredited
Quick installation times
Reduced site risks
Lower maintenance
Innovative product range
Fire resistance
Minimised site programmes
Sustainable manufacturing
MMC – reducing costs
Peace of mind

Why Precast Concrete

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Manufacturing quality

Manufactured to British Standards, under ISO 9001:2015

Kitemarked where applicable

Fire resistance

Structure is not compromised when subjected to heat

Will not burn or release harmful emissions during a fire

A1 Classified - Can be used within Fire Protection Plan

Durability and lifespan

Concrete gets stronger as it gets older

Proven service life of over 100 years

Sustainability

Reuse of excavated materials

Reduce need for imported material

No microplastic contamination

Strength

No special protection requirements

Structural integrity is maintained throughout lifecycle

Unaffected by rodent damage

Easy to install

Inherent strength allows for faster installation

Not dependent upon substandard bedding

Manufactured offsite, delivered ready to install

Concrete Benefits

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- Manhole Cover Slabs
- Bespoke Cover Slabs
- House Inspection Chambers
- Seating Rings/Adjusting Units
- Gully Cover Slabs/Raises
- Road Gullies
- Hydrant Bases
- Pipe Supports
- Cable Troughs
- Utility Protection Slabs
- Silo Base Slabs
- Flood walls

Water Management Products from Elite Precast Concrete

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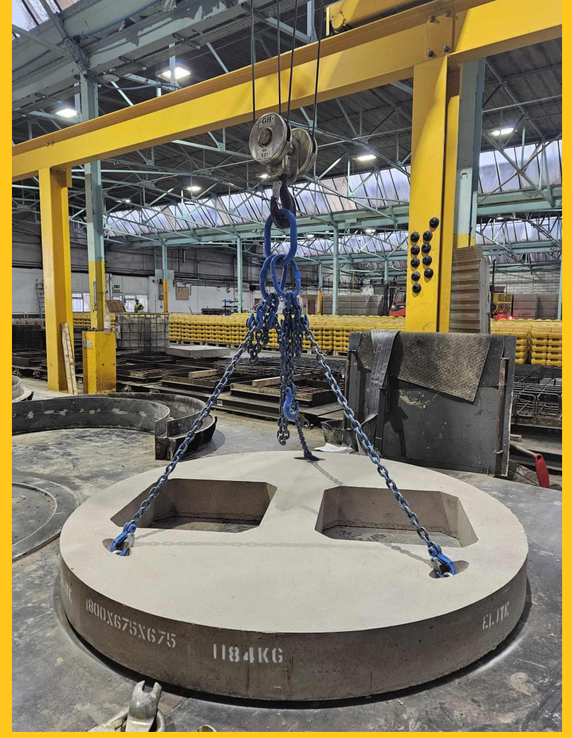
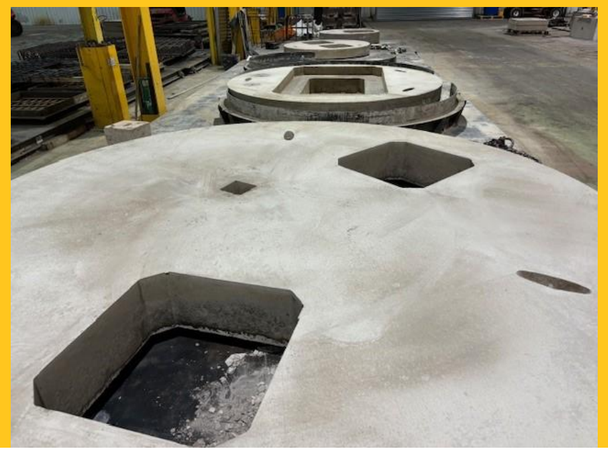
Applications

- Highways
- Housing
- Industrial
- Utilities
- Water Treatment

Benefits

- Multiple accesses
- Bespoke openings
- Heavy-duty loadings
- Availability
- Reduced onsite modifications





Manhole Cover Slabs

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Applications

- Roads
- Industrial yards
- Commercial developments
- Car parks

Purpose

- Capture runoff
- Prevents debris
- Reduces flooding

Gully Solutions

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Securing

Electric Cables
Water Pipes
Gas Services
Communications

Benefits

Visible warning
Mechanical protection
Long service life

Utility Protection – Concrete Cable Covers

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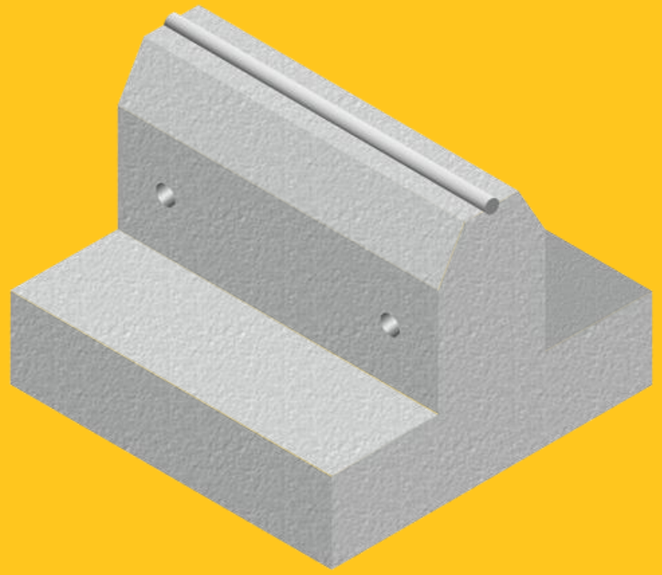
Applications

- Treatment works
- Pumping Stations
- Industrial sites

Benefits

- Reduced stress
- Improved alignment
- Simple installation



Pipe Support Systems

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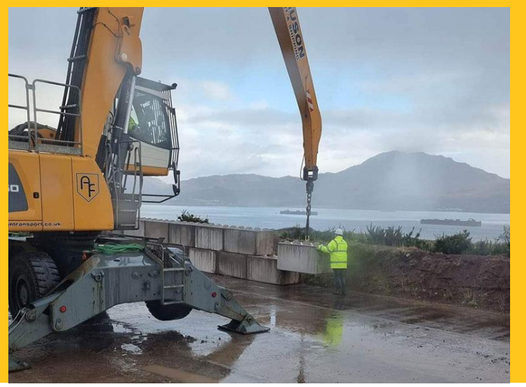
Applications

- Flood walls
- Temporary barriers
- River protection
- Storage lagoons
- Flow diversions
- Emergency works



Flood Management

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When compare with in-situ concrete

- ISO accredited factory quality
- No curing delays onsite
- Less weather dependence
- Reduced labour
- Reduced site costs
- Improved site programme certainty
- Health & Safety considerations
- Reduced vehicle movements
- Reduced waste

Construction Benefits

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Precast concrete contributes through

- Long service life
- Low maintenance
- Recyclability
- Reduced waste on site
- Local manufacture
- Lower whole-life carbon
- Reuse opportunities
- Local supply chain

Sustainability

Engineers should consider

- Loading
- Ground conditions
- Hydraulic requirements
- Traffic loadings
- Maintenance access
- Future capacity
- Whole-life costs

Design Considerations

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Common causes of failure

Poor bedding
Incorrect installation
Overloading
Inadequate backfill
Poor access design
Incorrect product selection
Lack of maintenance

Installation best practice

Follow industry guidance
Correct lifting methods
Proper bedding
Joint sealing
Quality backfill
Correct compaction
Inspection before backfilling

British Association Landscape Industries ACCREDITED

Achilles

mpa essential materials sustainable solutions

BSI REGISTERED FIRM

ISO 9001:2015

APPROVED Constructionline Silver Member

JOSCAR REGISTERED

NUCLEAR AMRC

CE

ISO 14001:2015

Class A Fire Rating

Rail Forum

RAILWAY INDUSTRY SUPPLIER QUALIFICATION SCHEME RISQS AUDITED

RAILWAY INDUSTRY SUPPLIER QUALIFICATION SCHEME RISQS VERIFIED

ISO 45001:2018

Product Accreditations

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Digital asset management

Smart drainage

Greater SuDS adoption

Carbon reduction

Modern methods of Construction

Increased offsite manufacture

Future Trends to Climate Resilience

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Effective water management requires:

- Good design
- Quality materials
- Correct installation
- Whole-life thinking
- Sustainable infrastructure

Precast concrete plays a significant role in delivering resilient, durable and efficient water management solutions across the UK

Summary

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