Meres & Mosses Business Environmental Network

Improving water management

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environmental water management

Hafren Water

* Shrewsbury based consultancy specialising in practical groundwater and surface water issues
* Network with many other specialists and contractors – able to provide the best team for a task

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Benefits of improving water management

* Potential for efficiencies AND cost savings
* Ensuring regulatory compliance
* Good housekeeping – pollution prevention
* CSR PR
* Ecological / habitat enhancement and biodiversity
* Avoidance of potential adverse impact upon business
* Security of water supply
* Carbon reduction / water footprinting

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Elements of water management

* Source
* Discharge

Categories of improvement

Source

* Reduction
  * leakage
  * re-cycling / re-use,
  * water use efficiencies and / or efficiency measures
* Alternative water supply
  * Waterwell – groundwater supply
  * Rainwater harvesting
  * Surface water abstraction

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Categories of improvement

Discharge

* Measures
  * Reduce volume
  * Regulate discharge flow rates
  * Improve water quality
* Benefits
  * Cost reduction
  * Less environmental impact
  * Potential for ecological enhancement

Alternative supply - Waterwell

* Pros
  * Cost of water
  * Security of supply
* Cons
  * Capital cost
  * Water treatment may be necessary
  * Pump breakdown – disruption to supply
  * On-going maintenance

Criteria for waterwell feasibility

* Suitable aquifer
* ‘Open’ aquifer – ability to obtain a licence
* Water quality – treatment required?
* Water volumes > 15,000 m^3/annum

Example 1: Semi conductor manufacturer

* Requirement;
  * 150,000 m^3/year,
  * High quality water

* Borehole prognosis showed;
  * Aquifer; Secondary A
  * Local records indicate 70 – 80,000 m^3 achievable
  * Shale and slate likely to yield mineralized water. But water treatment plant on site

Improved discharge options

* Reduce volumes discharged via;
  * Separate ‘clean’ and ‘dirty’ water
  * Use of swales
  * Retention basins
  * Soakaways
* Improve water quality
  * Water treatment, basic to RO
  * Wetlands / reedbeds
  * Grass plots

Example 2: Drinks manufacturer

Background

* Restricted option for mains sewer discharge
* Produce 250 to 500 m^3/d waste water
* Initially tankered waste water from site, some to sewer
* Clean water (rainfall run-off) discharged to soakaway

Solution

* Installed a large waste water soakaway / retention basin
* On-going improvements to water treatment
* Re-used increasingly larger volumes of water

Water management auditing

* **Objective** - holistic understanding of an operation
* **Method** - identify and quantify
* **Benefits** **-** cost reduction
  - efficient use of resources
  - avoid regulatory issues
  - inform decision making

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Water management audit

Three elements:

* Desk study - data gathering,
  - proforma questionnaire
* Site visit - walkover and discussion with site personnel
* Reporting- proforma style report -
  readily accessible data and summaries

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Water management audit; Supply

Water Usage

- Identify water uses on-site e.g. Washdown, domestic etc
- Quantify usage and temporal variations

Water Quality

- Identify appropriate water quality standards.

Water Costs

- Breakdown of costs for each water use
- Temporal variation of volumes / costs

Water Storage

- What is water storage capacity on-site?
- Location of storage in relation to use

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Water management audit; Supply

Alternative water sources

- Have alternative water sources been considered? What types?
- Is there a more cost-effective source than the existing one?
- Does nearby industry use a similar source?
- Can water supply be split into multiple sources?

Water management audit; Discharge

Water Volumes

- Identify sources of waste water from different processes e.g. Washdown, yard run-off etc
- Quantify volumes and temporal variations

Water Costs

- Breakdown of costs for each water element that requires disposal
- Temporal variation of volumes / costs

Non-mains discharge options

- Identify appropriate water quality requirements
- Identify treatment options
- On-site disposal / re-use
- Potential environmental benefits / partnering

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Water management audit report

Recommendations

* Improvements to site water management
* Can results of the audit be used to co-ordinate improvements (Planning, Strategic, regulatory and practical)
* Can a monitoring plan be implemented to provide further information?

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SUMMARY

* Water issues continually increasing in prominence
* Regulatory, planning, strategic and practical issues all need to be considered.
* Improvements to both water supply and discharge can be achieved, significant benefits
* An appropriately designed water management audit can be an effective tool to identify improvements and to inform decision making

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