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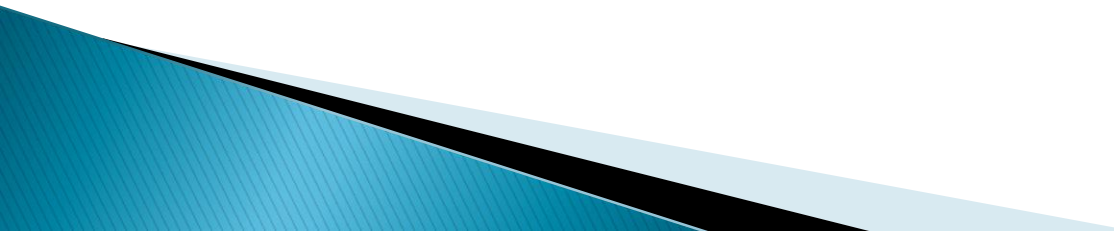
**INDEPENDENT IRRIGATION  
CONSULTANTS**



British Turf &  
Landscape  
Irrigation  
Association –  
Full Member

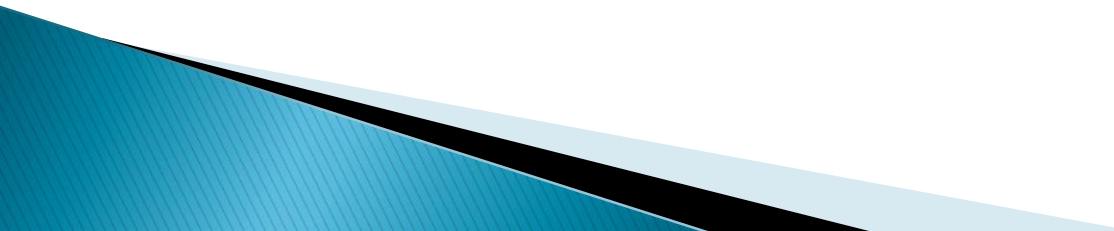
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## Introduction

- ▶ Fully Independent Irrigation Consultancy Practice
  - ▶ Office:- Approx 10 mins from Taunton, working throughout Europe, Middle East & Asia with 39 projects in 13 countries
  - ▶ Specialising in irrigation system appraisal, design and installation management
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## How Do We Work?

- ▶ We assist golf clubs in procuring irrigation products / systems that best suit that particular club's needs.
  - ▶ We help the club by producing a specification / layout design which can be tendered equally in the open market place, ensure that the club procure at the best price for their particular requirements.
  - ▶ We appraise existing irrigation systems and assist the club in phased upgrades.
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## Existing Irrigation Systems

- ▶ Water is a commodity and as such must be managed correctly i.e:-  
Abstraction licenses through to application rates

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## Irrigation System Components

- ▶ Split the system into five components.
- ▶ What is good?
- ▶ What is bad?

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## Water Sourcing / Storage

- ▶ Mains water
- ▶ Water from storage reservoir
- ▶ Borehole supply (summer and / or winter)
- ▶ Grey water
- ▶ Above ground tank
- ▶ Water storage lake / reservoir
- ▶ Underground tank

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## Water Sourcing / Storage

- ▶ Good

- Signage, risk assessments, quality tests.

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## Water Sourcing / Storage

- ▶ Bad

- No risk assessments, leaking storage, no fencing / signage / testing.



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## Water Sourcing / Storage



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## Water Sourcing / Storage





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## Water Sourcing / Storage



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## Water Sourcing / Storage





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## Water Sourcing / Storage



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## Pumping Station

- ▶ Delivers water to the fine turf areas.
- ▶ Operates at above 8.0 bar pressure (120 psi).
- ▶ Uses three phase (415 volt) electricity.
- ▶ Without correct flow / pressure, sprinklers will not pop up / deliver water effectively.

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## Pumping Station

▶ Good

- Well signed
- Operating risk assessment in place
- No leaks / no corrosion
- Spacious ventilated pumphouse / dry

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## Pumping Station

- ▶ Bad

- Leaking pumps – water next to 3 phase electricity
- No operating risk assessment or signage
- Rodents / slip hazards
- No pressure test certificates for pressure vessel



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## Pumping Station



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## Pumping Station





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## Pumping Station



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## Underground Mainline Pipe

- ▶ Carry water from pump to fine turf / sprinklers.
- ▶ Manufactured in UVPC or MDPE.
- ▶ Sizes are critical.
- ▶ Ability not to leak / waste water important – leakage = low pressure / flow.

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## Underground Mainline Pipe

- ▶ Good
  - MDPE correctly jointed
  - Velocity below 1.5m/s
  - Air valves

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## Underground Mainline Pipe

- ▶ Bad

- UPVC, life span of approx 20-25 years, glue joints crack and leak
- Leakage, costs money, lowers pressure, reduces uniformity, run sprinklers for longer = more water
- Repairs / leakage costs time / money
- Low pressure = agronomic issues



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**Underground Mainline Pipe**



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**Underground Mainline Pipe**





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**Underground Mainline Pipe**



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## Control Valves / Cable / Control System

- ▶ Solenoid valves control flow of water into sprinklers.
- ▶ Manual watering points included at these positions.
- ▶ Size critical / condition critical – 8.0 bar pressure still present.
- ▶ Cable joints must be waterproof.
- ▶ Control system should record / register / calculate.

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## Control Valves / Cable / Control System

- ▶ Good

- Sound / non corroded assemblies in steel
- Pressure regulation
- Clean chambers / locked lids
- Level chambers
- PC based control system

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## Control Valves / Cable / Control System

- ▶ Bad

- Corroded leaking assemblies, waste water, Health & safety issues
- Trip hazards
- Cable faults / poor performance
- Poor cable joints



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## Control Valves / Cable / Control System



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## Control Valves / Cable / Control System





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**Control Valves / Cable / Control System**



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## Control Valves / Cable / Control System





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## Control Valves / Cable / Control System



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## Sprinklers

- ▶ Apply water to fine turf areas, Greens / Tees, Approaches / Fairways.
- ▶ Must be spaced head to head i.e. sprinklers throw to the opposite number.
- ▶ Correct flow / pressure / spacing / nozzles are paramount.
- ▶ Level / same make and model.

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## Sprinklers

- ▶ Good

- Valve in head sprinklers are individually controlled, therefore water can be applied to include areas of the Green / Fairway (conserve water)
- Head to head spacing, 20m radius of throw sprinkler must be 20 metre spacing or less
- Uniform spacing = uniform precipitation, water conservation and reduced electric / water costs



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## Sprinklers



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## Sprinklers



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## Sprinklers

- ▶ Bad

- Uneven spacing
- Mixed nozzles
- Mixed models
- Low pressure



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## Sprinklers





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## Sprinklers





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## Sprinklers



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## Conclusions

- ▶ The irrigation system must be safe and efficient.
- ▶ If not, a replacement can be designed and installed in phases.
- ▶ Infrastructure is crucial – good foundations provide a good house.



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## Just When You Thought It Was Safe!



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## Just When You Thought It Was Safe!

