South Downs Way Ahead Nature Improvement Area

South Downs
National Park Authority

South Downs Collaborative Nitrate Modelling Project

What's it about?

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Principle NIA Aim

To provide **evidence** of how sustainable/improved land management practices can improve groundwater quality.

What's the Problem?

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- Under the EU Water Framework Directive classification, 73% of groundwater bodies across SDNP failing chemical standards due to **nitrate**.
- This is attributed to land management practices (South East River Basin Management Plan, 2009).
- Areas currently at 'good status' predicted to fail before 2020 – i.e. it will get worse!

What's the Problem?

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- 1.2 million people depend on water filtered by the South Downs.

  OUR WATER COMES FROM THE CHALK.

What's the Problem?

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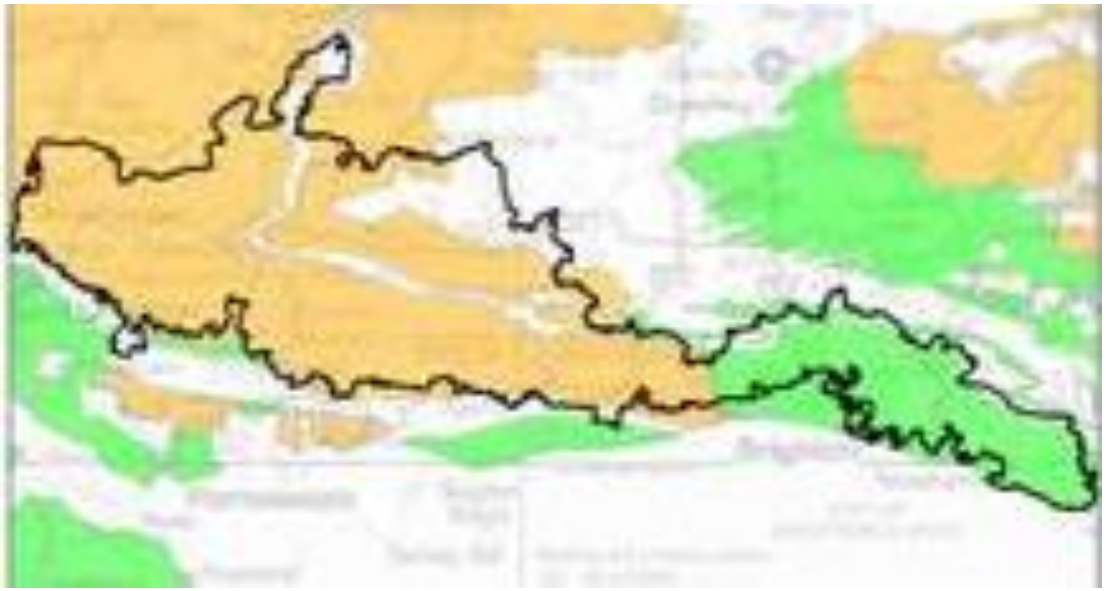

- Orange – Fail
- Green - Pass

- Green area predicted to fail before 2020

What's the Problem?

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- Rising nitrates in the ground are causing a problem with drinking water.
- Water companies are having to invest in improved/increased treatment (including the blending of sources to dilute nitrate concentrations).
- This investment has to be met by the bill payer.

NIA - The start of a Solution

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- Nitrate modelling project component of South Downs Way Ahead NIA programme.
- Project conceptualised by SDNPA and NIA.
- Being delivered in partnership with Environment Agency, Downs & Harbours Clean Water Partnership, Portsmouth Water and Southern Water (through match funding contributions).

NIA 3 phased approached

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- First phase of project – the technical modelling (2013).
- Second phase – utilisation of results; development of an engagement and advice programme with a wider array of partners – inc. farmers & LAs (2014).
- Third phase – direct action (2015 & beyond).

Phase 1 - 3 elements

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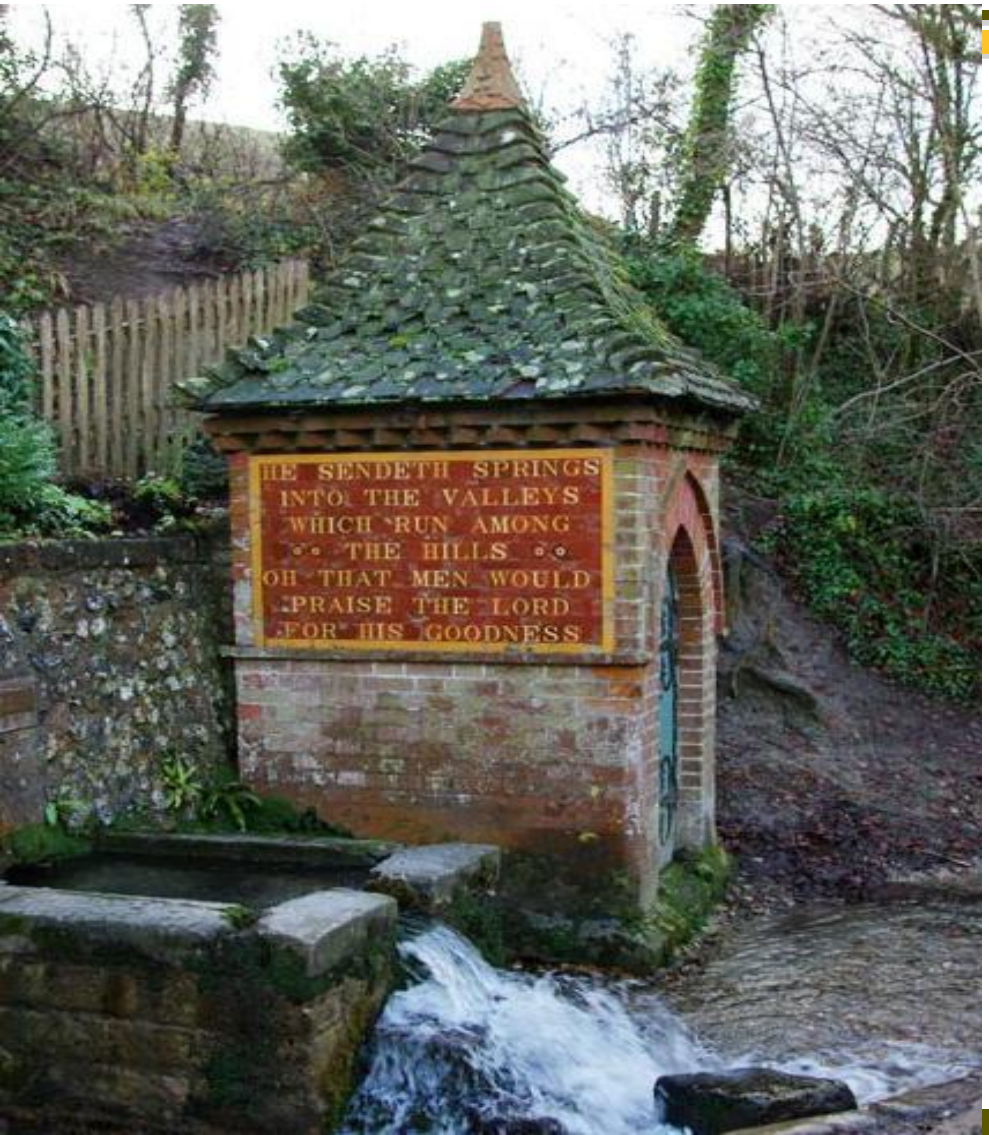

- Risk mapping of nitrate pollution (risk maps).
- Identifying types of pollution of every groundwater body (pie charts).
- Development of scenarios for mitigation.

Phase 1 – Risk Mapping

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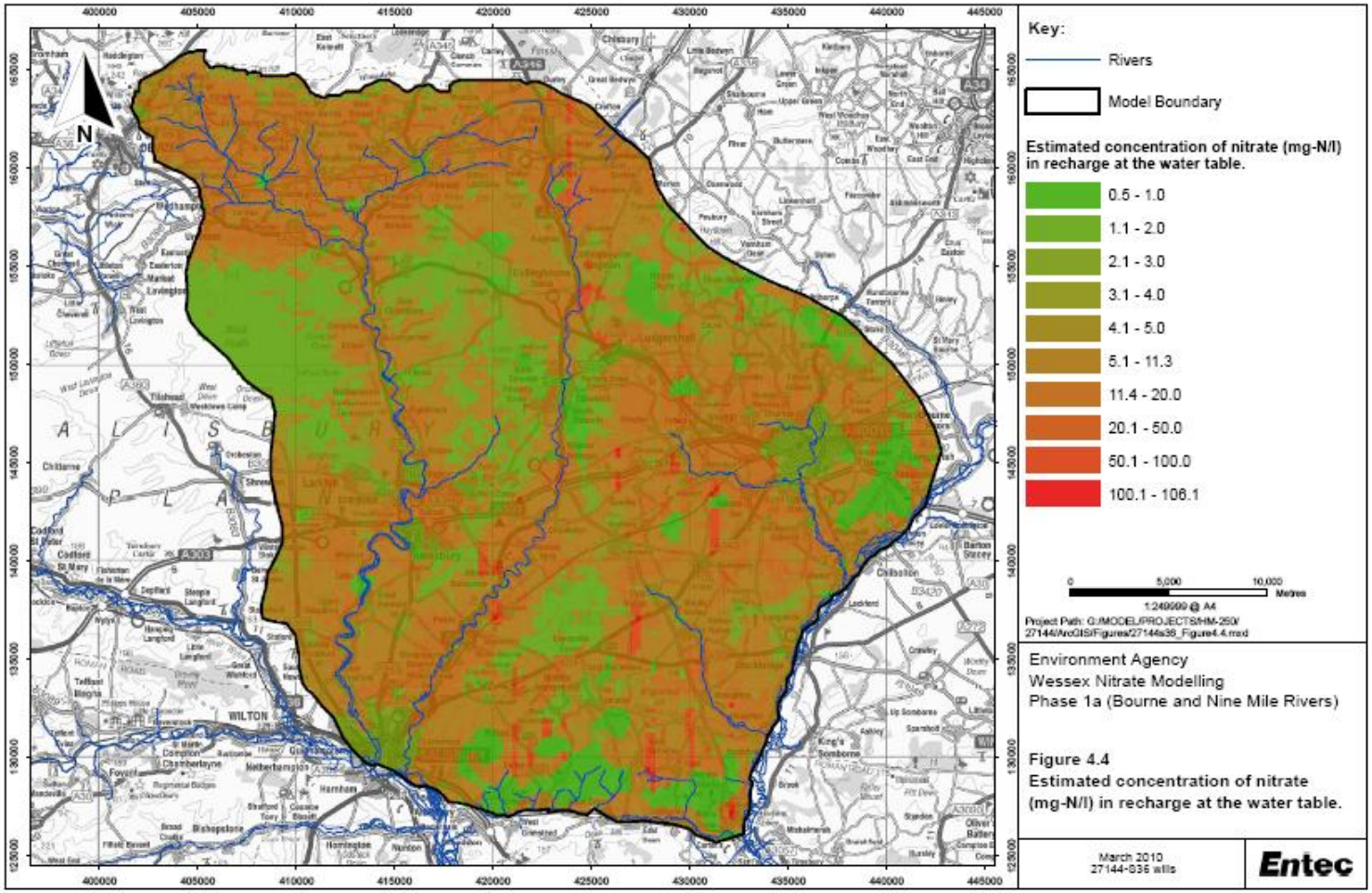
- Development of risk maps of nitrate pollution.



Phase 1 – Types of pollution

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- Development of a nitrate 'source apportionment tool'.
- Provides information on the contribution of nitrate from different sources (e.g. landfill, sewage discharges, agricultural land use etc.)
- Pie chart for every groundwater body identifying sources of nitrate pollution and contribution.

Output for Eastbourne chalk block

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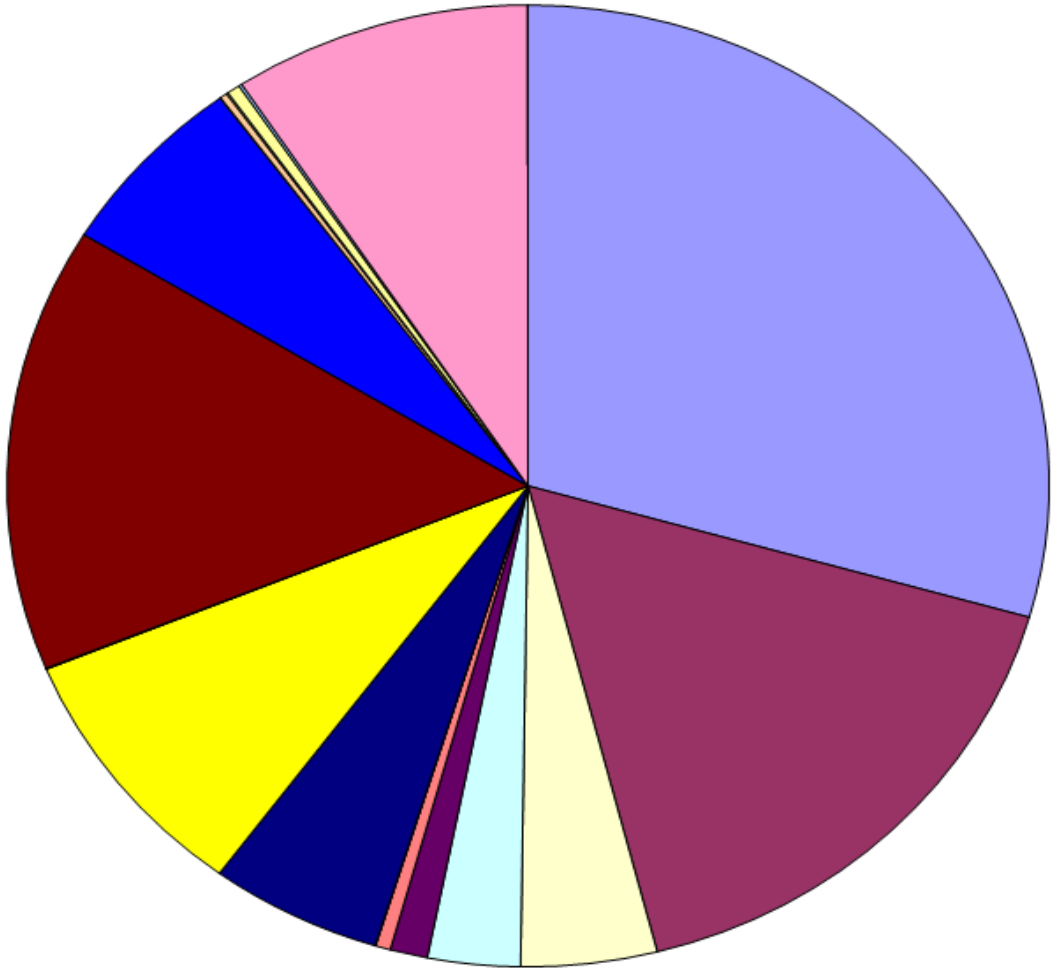

- Grazed Grass 29.4 %
- Cut Grass 16.6 %
- Temporary Grass 4.21 %
- Cereal crops 2.87 %
- Other arable 1.15 %
- Bare fallow 0.46 %
- Rough grazing 0 %
- Orchards 0.01 %
- Woodland 5.34 %
- Ploughed out long term grass 0 %
- Winter Oilseed Rape 8.68 %
- Spring Oilseed Rape 0 %
- Potatoes 0.02 %
- Wheat 14.93 %
- User-defined crop 5: 0 %
- Urban area (towns, villages) 6.18 %
- Sewer leakage 0.02 %
- Treated sewage effluent discharges 0.21 %
- Mains leakage 0.05 %
- Agricultural point sources 0.4 %
- Graveyards 0.09 %
- Landfills 9.25 %
- Animal burials 0 %
- Roads (outside urban areas) 0.01 %

Phase 1 – Scenarios

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- Predicts future nitrate concentrations with no action.
- Identification of potential measures to reduced nitrate pollution.
- Measures include: land use change, livestock management, fertilizer management, manure management, organic farming etc.
- Cost-benefit analysis of measures.

Phase 2 – Engagement

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- Development of an 'advice programme' to influence behaviour change to complete by March 2015.
- Drive the implementation of the appropriate 'on the ground ' mitigation measures (identified through the modelling) through partnership working.
- The project has already influenced Southern Water and Portsmouth Water to extend the scope of this modelling beyond the NIA area and develop catchment management measures in their 2015-2020 business plans.

Phase 3 – On the Ground Action

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- Portsmouth Water is now proposing a £1.2 million programme of catchment management work for their groundwater sources (all of which have their catchments in the SDNP).
- Includes a capital grant scheme for land managers.
- Robust evidence will help develop further innovative catchment management measures for PR19 (2020-2025)
- This could include 'payments for ecosystem services'-type schemes (obviously need this robust evidence to provide justification to Ofwat).

In conclusion…

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- NIA Partnership project producing evidence to drive action on reducing nitrate in groundwater.
- Phase 1 - the technical modelling phase, completes January 2014.
- Phase 2 – development of an 'advice programme' to influence behaviour change to complete by March 2015.
- Phase 3 - Driving the appropriate 'on the ground' mitigation measures through partnership working.
- **IT'S THE NIA THAT HAS DRIVEN THIS.**