

# Transport Asset Management

## Element 2 Funding

***Warwickshire County Council***

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25<sup>th</sup> September 2009



*Working for  
Warwickshire*

- Local highway network is vital in ensuring the economic, social and environmental of Warwickshire's residents.
- Element 2 bid submitted in December 2008.  
Focus on:  
*reducing the impact of Climate Change in Warwickshire*  
*Warwickshire's contribution to helping to meet overall climate change targets*
- WCC awarded £500,000 as a result of bid

Already hold relatively good quality data on most highway assets – but scope for improvement.

## Focus on 4 areas of work:

1. Traffic and highway management to help **reduce bus journey times – Vicky Porter**
2. Reducing **street lighting** material use and energy consumption – **Simon Moesley**
3. Improving **drainage solutions – Andrew Savage**
4. **Reducing material use** whilst maintaining asset value – **Andrew Savage**

# Traffic and Highway management to help reduce bus journey times

- Data led approach to help improve schedule adherence and reliability
- Partnership approach with Bus Operator
- Builds on existing work/data – X17 route
- Wider benefits – help to deliver LTP shared priorities

# What are we going to do?

- £50,000 allocated to this project
- Use of GPS data loggers onboard vehicles - cost effective method of providing a robust survey sample
- Service X17 - ongoing. TAMP - further surveys concentrating on other key bus routes.



# What do we do with the data?

- Analysis of data - outputs compared to timetable to highlight frequent delays – allows WCC to pinpoint congestion ‘hotspots’
- Analysis used to enable bus timetable amendments and delivery of traffic management schemes e.g. introduction of loading/waiting restrictions, provision of box junctions – to improve reliability

# Measuring our Success

- Post scheme monitoring will take place after feasible improvement works have been implemented.
- Other ways of measuring success include
  - patronage on route
  - LTP shared priorities - Air Quality & Congestion measures

# Dimming/turning off street lights in specific corridors

- £50,000 provisionally allocated
- Data led approach and work builds on existing dimming trial started in 2008
- £50,000 used to fund a trial Street Lighting Central Management System (preferred system yet to be identified)



# Previous Work

- County Councillors of Warwickshire presented with a committee report on the part night operation of street lights
- Part night operation rejected but dimming in certain areas allowed on a trial basis
- Dimming trial of 100 units started in 2008 which proved idea but retrofit equipment was unreliable

# What are we going to do?

Expand on dimming trial and procure Central Management System equipment and fit to each of the following in a trial area:

- Street lighting column
- illuminated sign
- illuminated bollard

Install Software and Hardware required to control installations from WCC offices



# Key Outcomes & Outputs

Expected outputs from the system in the trial area include:

- ability to dim lights to required level
- ability to alter lighting levels for local events
- ability to turn off lights at specified times
- provide measurement of actual energy consumption at each lighting point
- provide fault reporting without the need for night inspections

# Cost and CO2 savings

Lamp	Standard			Part Night 24:00 – 05.30				Dimmed 60% Power (50% output) 19:00 – 06.00			
	Annual kWh	Annual Cost	KgC O2	Annual kWh	Annual Cost	Saving £'s	Saving KgCO2	Annual kWh	Annual Cost	Saving £'s	Saving KgCO2
70W SON	323	£37.01	174	184	£21.13	£15.88	75	211	£24.20	£12.80	60
100W SON	461	£52.93	249	264	£30.23	£22.71	107	302	£34.62	£18.31	86
150W SON	637	£73.08	344	364	£41.73	£31.35	148	417	£47.80	£25.28	119
250W SON	1188	£136.31	642	679	£77.84	£58.48	275	777	£89.16	£47.16	222
90W SOX	502	£57.62	271	287	£32.90	£24.72	116	Currently Unavailable			
135W SOX	715	£81.98	386	408	£46.81	£35.17	166				

Example – 150W SON lanterns in Warwickshire = 2914

Standard		Part Night 24:00 - 05.30		Dimmed 60% Power (50% output) 19:00-06.00	
Annual Cost	Tonnes CO2	Saving £'s	Saving Tonnes CO2	Saving £'s	Saving Tonnes CO2
£160,328.37	755	£68,779.46	324	£55,463.25	261

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# Potential for replacing illuminated signs with retro reflective signs

- £100,000 provisionally allocated
- Data led approach to build on work already undertaken
- Quantifiable benefits





Pilot area to be identified – likely to be a town

Utilising existing illuminated sign maintenance data to identify road signs that:

- have potential to be de-illuminated (disconnected from power source)
- require illumination but where more efficient lighting methods can be used

Desk top exercise initially




Following this initial desk top exercise:

- the pilot area will be identified
- manual visit to all likely sites to determine actual feasibility
- arrange necessary works

# Work Costing – De-illumination

Sign Mounting	Lighting Type		
	Externally Lit No replacement plate	Externally Lit With replacement plate	Internally Lit
On Lamp Column	£40.00	£100.00	£100.00
On Separate Post	£298.00	£358.00	£358.00

	
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## Outcome:

Reduction in Street Clutter – surveyed signs will be rationalised to determine their relevance and unnecessary signs removed.

Removing lamps and electrical connections or switching to energy efficient light sources will have a positive impact

- Reduction in energy
- Reduction in CO2
- Reduction in waste

# Costs and CO2 emissions for sign lights per annum

Lamp type	KWHr	Cost @ 11.47p kWh	Annual Maintenance (BLCC + 1/6 elec test)	Total Cost	kg CO2
Ext Lit 2 x 8W (U)	245.28	£28.13	£10.40	<b>£38.53</b>	<b>133</b>
Ext Lit 1 x 11W (U)	157.68	£18.09	£9.30	<b>£27.39</b>	<b>86</b>
Ext Lit 2 x 8W (P)	118.44	£13.58	£10.40	<b>£23.98</b>	<b>64</b>
Ext Lit 1 x 11w (P)	77.60	£8.90	£9.30	<b>£18.20</b>	<b>42</b>
Int Lit 2 x 15W (U)	438.00	£50.24	£10.00	<b>£60.24</b>	<b>237</b>
Int Lit 2 x 15W (P)	208.28	£23.89	£10.00	<b>£33.89</b>	<b>113</b>
Ext Lit 2 x 11W (U)	315.36	£36.17	£10.60	<b>£46.77</b>	<b>171</b>
Ext Lit 2 x 11W (P)	151.11	£17.33	£10.60	<b>£27.93</b>	<b>82</b>
Ext Lit 1 x 36W (U)	402.96	£46.22	£9.75	<b>£55.97</b>	<b>218</b>
Ext Lit 1 x 36W (P)	191.95	£22.02	£9.75	<b>£31.77</b>	<b>104</b>
Ext Lit LED (P)	81.68	£9.37	£1.00	<b>£10.37</b>	<b>44</b>
Int Lit LED (P)	40.84	£4.68	£1.00	<b>£5.68</b>	<b>22</b>

- U = Uncontrolled continuous burning
- P = Photo Electric control to switch regime 821 70/35 Lux
- CO2 contains element for maintenance vehicle based on 50 units per day at 20mpg
- Ext lit = Externally lit sign i.e. A type sign light
- Int Lit = Internally lit sign
- This does not include any unplanned maintenance visits which costs approximately £50.00 per visit and approximately 5KgCO2 in vehicle emissions
- This does not include costs for any traffic management

# Energy saving in practice

Best case for sign light removal = 438kWh



Best case for re-illuminating = 398kWh

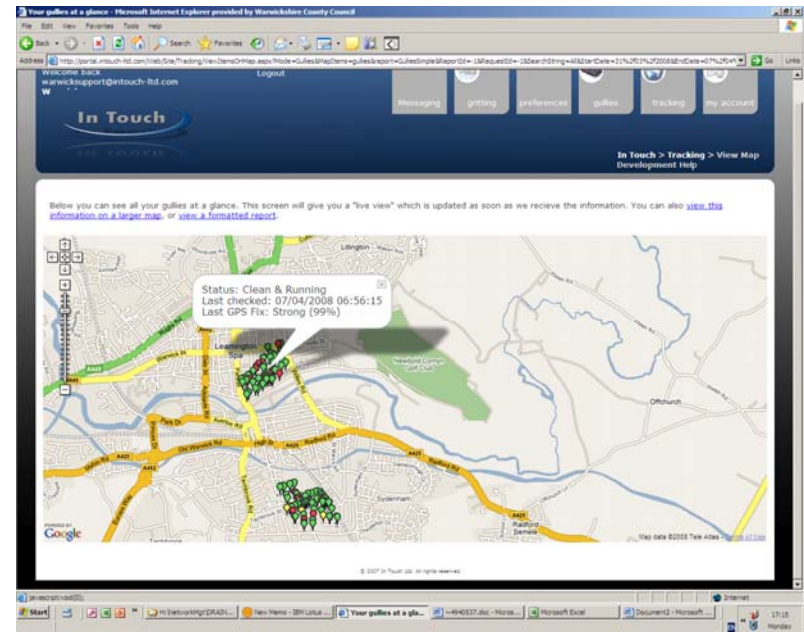


# Future Work

- DfT are currently undertaking a Traffic Signs Policy Review.
- This could result in a reduction in sign illumination requirements.
- There may be an opportunity to work with the DfT to undertake research into the possible use of new technologies in road signing.
- WCC would look to investigate the environmental and financial impacts of the use of any new technologies.

# Improving Management of Highway Drainage Infrastructure

Andrew Savage – County Highways Contract Manager



25<sup>th</sup> September 2009

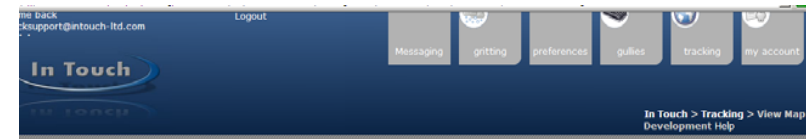
OTHER BACKGROUND ISSUES FOR WARWICKSHIRE  
2007 Floods – impacted on over 75 Communities where 5-150  
properties were flooded.

Over 2000 properties flooded and greatly raised focus on  
drainage matters.

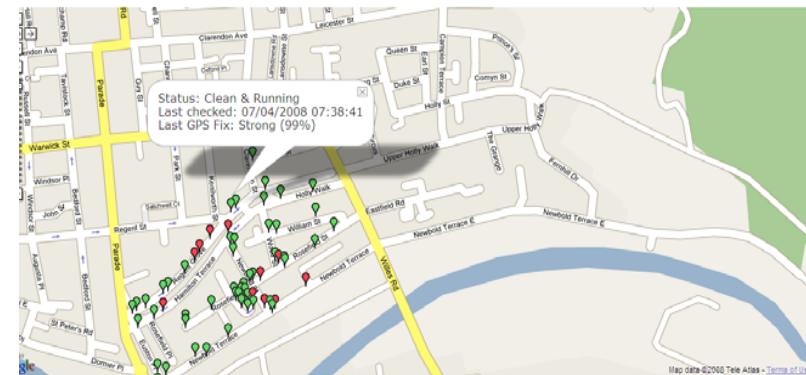
Backlog of blocked gullies increased to 14%



- To date, WCC have collected gully data using the In Touch gully box system
- But.... there are issues with this system as an on going method of data collection
- Currently no effective way to create gully history



Now you can see all your gullies at a glance. This screen will give you a "live view" which is updated as soon as we receive the information. You can also [view this map on a larger map](#), or [view a formatted report](#).



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# Drainage Asset Management Proposals

## Objectives

- To collect gully numbers more accurately (93,000+)
- To collect gully positions accurately
- To provide a solution within a specified timescale
- To have ability to update gully records accurately to maintain accurate records
- To identify impact of any potential solutions and identify additional resources needed, if any

- Improving customer service – smarter details in call centre to take query details and future feedback
- Accurate location details save wasted time by repair gangs going to wrong site
- Intelligent variable frequency cleaning can save circa
- £45000 per annum



# COST- BENEFIT ANALYSIS OF COLLECTING GULLEY DATA

	Year 1	Year 2	Year 3	Year 4	Year 5
Cost of capturing gulley data.	£90,000				
Hardware	£10,000				
Software	£10,000				
IT/Other staff costs	£15,000	£15,000	£10,000	£10,000	£10,000
Costs	£125,000	£15,000	£10,000	£10,000	£10,000
Saving by Variable frequency gulley emptying- 10,000 units	£50,000	£50,000	£50,000	£50,000	£50,000
Annual saving	-£75,000	£35,000	£40,000	£40,000	£40,000
Accumulative Saving	-£75,000	-£40,000	£0	£40,000	£80,000
TOTAL COST OVER 5 YEARS	£170,000				
TOTAL SAVINGS OVER 5 YEARS	£250,000				
<b>Nett Saving plus many customer benefits</b>	<b>£80,000</b>				

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# Summary

- Smarter information for smarter decisions, better informed staff and customers.



# Reducing Material Use

- Warwickshire has strived to develop a thorough process for selecting the most appropriate maintenance treatments to help reduce material use whilst maintaining asset value.
- The decision process relies on having inventory and condition information.
- The extent and availability of this information has improved over the years but there are still further improvements to be made.

# The Vision

- **The vision is for a searchable map based system which includes**
  - Historic Surfacing Treatments
  - Construction Thicknesses
  - Subgrade materials
  - Road Widths
  - Traffic Flows
  - Condition and rate of deterioration
  - Drainage Systems

# Present Reality

- Heavy reliance on paper based records which can restrict access
- Some records not map based
- Gaps exist in the inventory information

# Inventory Availability

The availability of existing inventory data can impact on its use, issues include:

- road surfacing database – based on hard copies of maps – only 1 set of maps are kept up to date.
- Surface dressing data can be accessed easily the lack of a mapped base results means much time is spent drawing up maps.
- Maps showing highway extent are located with the central adoption records – difficult to access.

# Missing Inventory

- There are several gaps in inventory information:
  - Limited information on footway extent and condition.
  - Lack of stored information about road widths – better information will improve estimates and save future re-measuring.
  - Construction thickness and subgrade materials this lack of information can result in poor decisions being made.

# Use of funds

- £50,000 provisionally allocated. Priorities include:
  - Identify and develop a map based record for surfacing and surface dressing works and an electronic system for recording surfacing works
  - Identify and develop an improved system for adoption records
  - Improve basic inventory data for: footway location and condition, average road widths and construction thickness.

# Use of Funds

- Once an option has been identified for recording and storing information a small area trial will initially be carried out before County Wide adoption

# Likely Benefits

- Reduction in time in searching for information or reinvestigating or remeasuring.
  - A reduction of 2 people from the 60 client staff would save some £100,000 per annum.
- An improvement in the effectiveness of the maintenance spend.
  - A 5% improved effectiveness in the £7 million structural maintenance budget gives a potential saving of £350,000 per annum

# Useful Links & Contact Warwickshire County Council website

[www.warwickshire.gov.uk](http://www.warwickshire.gov.uk)

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