PROJECT PROFILE

Title	**Assessment of warm mix asphalt for road surfaces**
Contractor	University of Ulster, Jordanstown
Contact details	Dr David Woodward School of the Built Environment University of Ulster, Jordanstown Co Antrim WDH.Woodward@ulster.ac.uk
TII Mentor	Tom Casey
Start date	Jan-11
End date	Dec-13
Status	Complete
Type of project	Fellowship project - 3-year PhD project (Ruth Mitchell)
Project reference	NR/04/250 RFP019

Description	Warm-mix asphalt is a term for a variety of technologies that allow the producers of hot-mix asphalt pavement material to lower the temperatures at which the material is mixed and placed on the road. Warm mixes provide an opportunity to mix and lay road surfacing at temperatures 20^{o}C or more below current specification limits. Such reductions have the obvious benefits of cutting fuel consumption and decreasing the production of greenhouse gases. In addition, potential engineering benefits include better compaction on the road, the ability to haul paving mix for longer distances, and the ability to pave at lower temperatures. This is achieved by the addition of modifiers to the base bitumen mix. Whereas some modifier have a neutral effect, others claim to improve mechanical characteristics such as stiffness. It is not know if the effects are long lasting or their influence on pavement design life.  **Application of warm mix** The environmental benefits from using warm mix materials accrue through lower temperature mixing and laying or road surfacing material. The use of warm mix asphalt would also improve working conditions for construction and maintenance crew, and local residents. Financial benefits through lower production and transport costs. The research is required in order to investigate the long term performance of these materials and produce material specifications for inclusion in TII standards.
Objectives	The objective of this research is determine any long term durability effects on bituminous road surfacings mixed through modification of admixtures used to enable production and laying at lower (ie "warm mix") temperatures.
Benefits	The benefits of this research to TII include: - to contribute to sustainable construction and maintenance of road surfaces - to enable informed decisions to be made concerning whole life rather than just initial benefits of warm mixes - reduce the environmental impact of road operations
Outputs	Outputs will include: - Specifications for warm mix road surface materials - Guidelines for production and placement - Whole life cost model - Revisions to design charts (if required) - Cost comparisons between options