Presentation to APSE Roads & Lighting Group 22nd August 2025

"A Greener Shade of Black"

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Tayside Contracts

Areas to Cover

- Introduction
- Governance - Joint Committee Overview
- Tayside Contracts - Who We Are and What We Do
- Introduction of Low carbon Materials
  - **Taylow – (Warm Mix Asphalt – SHW Cl 908)**
  - **Tayset – (Ex situ Cold Recycled Bound material – SHW Cl 948)**
- Questions

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Tayside Contracts Governance Joint Committee

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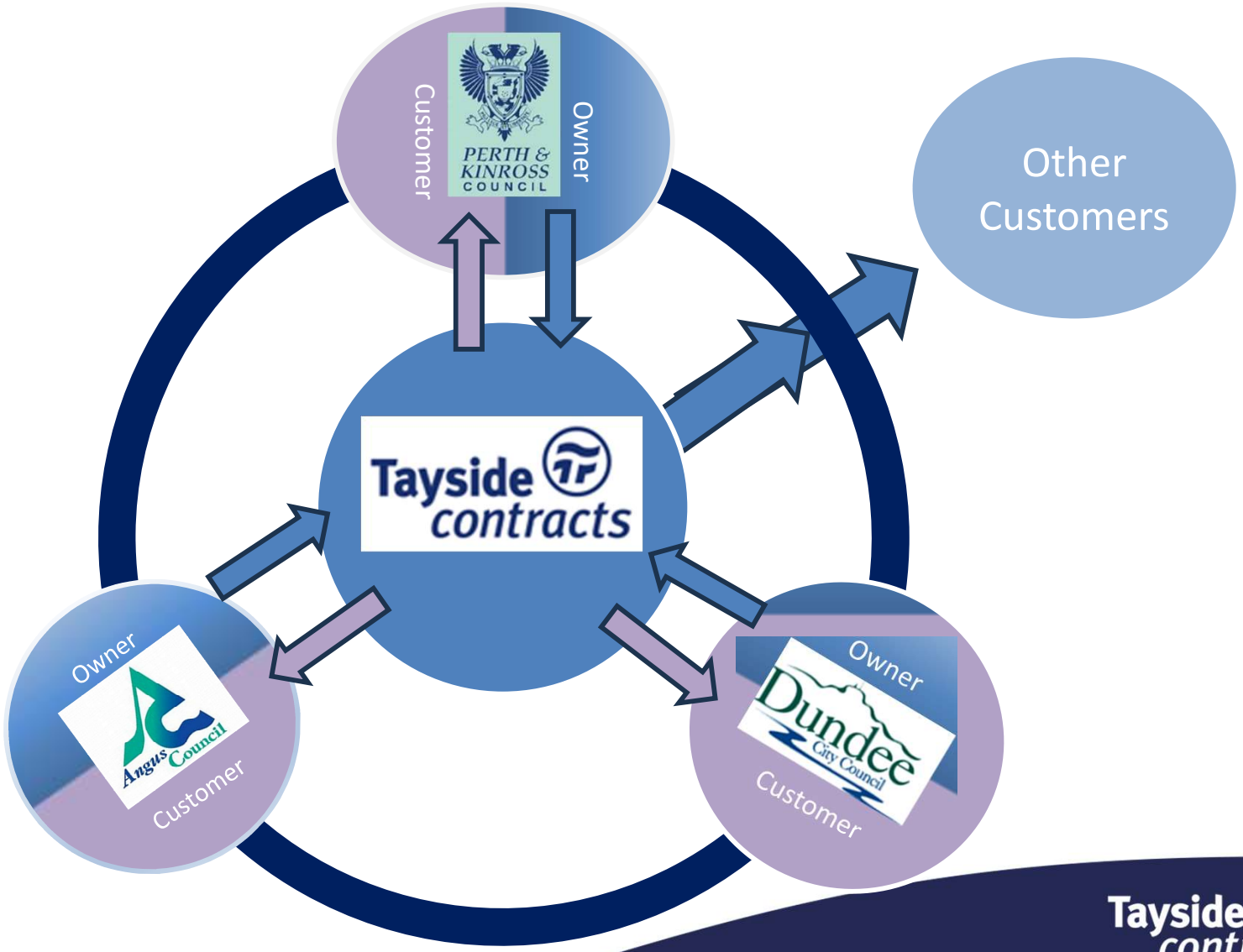
Tayside Contracts is a unique organisation……

- 100% owned by the three Councils
- 94% of income from the three Councils
- Reduced costs can result in reduced charges to customers, or increased surplus to the owners



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Administration of the functions of the Constituent Councils delegated to the Joint Committee

Tayside Contracts Who We Are and What We Do?

Who We Are

Tayside contracts

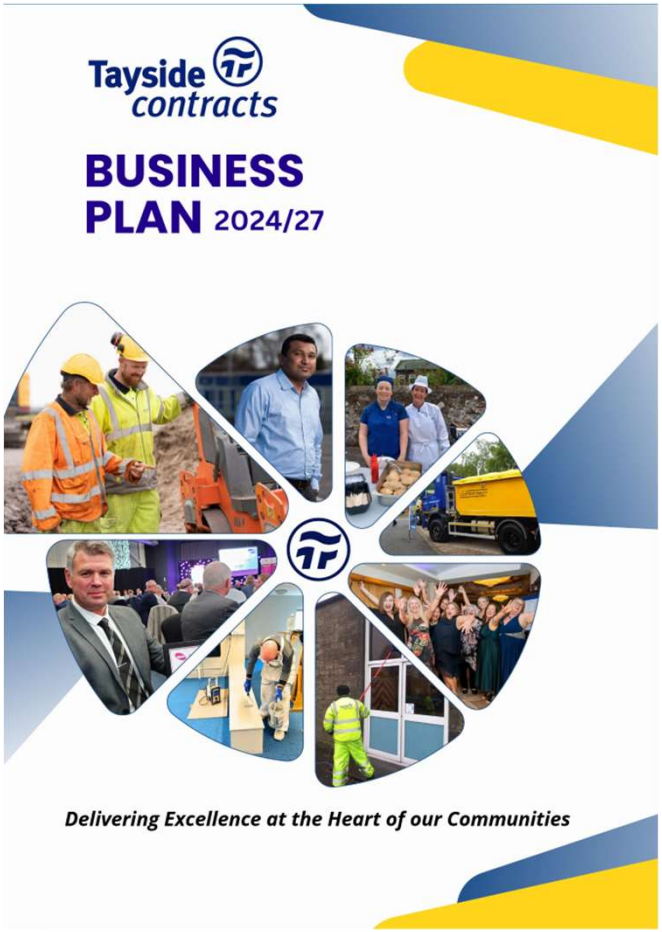
Largest and longest serving local authority shared service in Scotland

Turnover - £98 million

3,300 posts, 2,559 employees

100% owned by the three Councils. All surplus (profit) is returned to the Councils

Over £33m returned to the Councils as surplus, to reinvest in public services

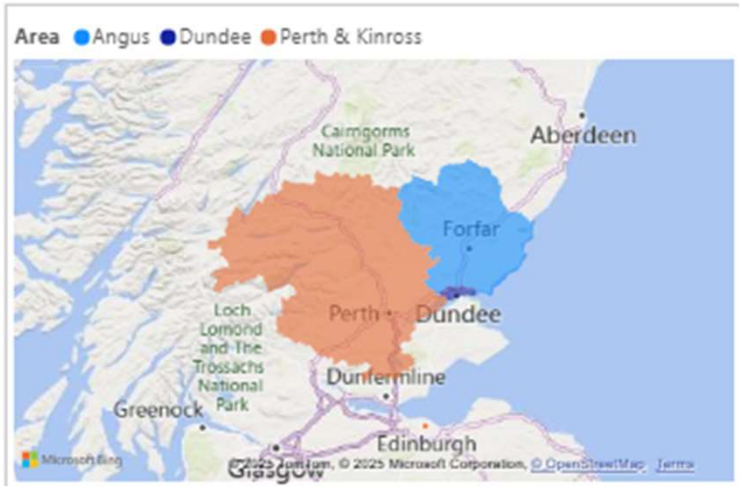


- **Our Vision:**

  "(what we want to be) – A high performing and expanding shared service: proud of what we do and chosen for how we do it."

- **Our Mission**

  "(what we do to exist) – Supporting our communities through excellent services"



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Introduction to Low carbon Materials
“A Greener Shade of Black”

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Why?

- **Aligns with our corporate agenda to minimise the impact our services have on the environment.**
- **Also to align with our council partners objectives of achieving Net Zero.**

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Track Record

- ✓ 2000 - Introduction of recycled materials as a replacement for virgin materials
  - ✓ Various recycling centres around Tayside
- ✓ 2001 - Introduction of Reed Bed Gully waste treatment
  - ✓ Three established across Tayside
- ✓ 2005 - Use of Recycled Asphalt Plannings (RAP) in hot mix
- ✓ 2007 - Ex Situ Cold Recycled Bound material – Tayset
- ✓ 2010 – Recycled ash filler used in asphalts
- ✓ 2018 – Alternative fuel – switch from Gas Oil to LPG
- ✓ 2019 - Warm mix consideration
  - ✓ Implemented May 2025

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Warm Mix Asphalts

Benefits of WMA:

- Warm mix asphalt are manufactured, supplied and laid at temperatures lower than conventional hot mix asphalt (20 to 40°C less).
- They also provide a number of site safety and productivity benefits, with no compromise on performance
- Reduced greenhouse gas emissions due to reduced energy in the asphalt manufacturing process
- Improved site safety with reduced exposure to fumes and lower working temperatures for road maintenance workers
- Reduced laying and compaction temperature making it possible to open roads to traffic sooner
- Increased workability of mix, giving extended fixed and mobile asphalt storage time

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Warm Mix Asphalts

Points to consider:

- Requirements of SHW Cl 908:
  - Material that can be manufactured as WMA
  - Not all asphalts material can be manufactured
- How to manufacture:
  - Use a binder designed for WMA
  - Use an additive to achieve WMA
  - Temperature reduction
    - Warm Mix Calculation 20oC Temp Reduction
    - Warm Mix Calculation 30oC Temp Reduction
- Cost - Does it cost more or less
  - Increased cost of additive
  - Reduced manufacturing i.e. fuel to heat
- The implementation
  - Briefing and communication

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Taylow

Increased Cost vs Environmental Benefit

Summary of key points :

- 20c reduction in temperature results in a cost increase of approx. 1% or less, ave of £0.88 per/T on current supply rates.
    - Based on a 20oC temp reduction, the average Co2 reduction and financial impact for each council using the previous 3 years material, suitable for warm mix is:
        - Dundee - Co2 reduction of 25.2T and additional cost of £6,653
        - Angus - Co2 reduction of 20.66T and additional cost of £4,649
        - PKC - Co2 reduction of 46.04T and additional cost of £14,486
        - **Overall Co2 saving of 91.9T**

- 30c reduction in temperature results in a cost increase of 0.5% or less, approximately ave of £0.36 per/T on current supply rates.
    - Based on a 30oC temp reduction, the average Co2 reduction and financial impact for each council using the previous 3 years material, suitable for warm mix is:
        - Dundee - Co2 reduction of 35.4T and additional cost of £3,462
        - Angus - Co2 reduction of 28.94T and additional cost of £2,097
        - PKC - Co2 reduction of 64.32T and additional cost of £8,635
        - **Overall Co2 saving of 128.6T**

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Taylow

Introduction

- May 2025 introduced to all dense base and binder courses

TAYLOW AC 32 Dense Base 40/60
TAYLOW AC 32 HDM Base 40/60
TAYLOW AC 20 Open Bin 40/60
TAYLOW AC 32 Dense Bin 40/60
TAYLOW AC 20 Dense Bin 40/60
TAYLOW AC 20 HDM bin 40/60

- June 2025 introduced to all close graded asphalt concrete surface courses

TAYLOW AC 14 Close Surf 100/150
TAYLOW AC 10 Close Surf 100/150
TAYLOW AC 6 Dense Surf 100/150
TAYLOW AC 6 Med Surf 100/150
TAYLOW BBTM 6 Surf 100/150
TAYLOW AUTL 6 Surf 100/150

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Taylow Communications

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COLLACE QUARRY WARM MIX ASPHALT 2025

Introduction

In an ongoing commitment by Tayside Contracts and our council partners of Angus, Dundee City and Perth and Kinross councils to consider how the services we provide impact the climate change agenda and the commitment to reduce our CO2 emissions to help move towards a net zero objective, we are pleased to advise the introduction of Warm Mix Asphalt materials 'TayLow' into the range of low carbon materials produced at Collace Quarry for more sustainable road surfacing.

Background

Warm mix asphalt (WMA) was developed in Europe in the 1990's in response to increased awareness of Climate Change, and in particular, greenhouse gas emissions. Since then, WMA techniques have advanced and manufacture has gradually been accepted across Europe, as well as being established in the USA. In 2019 'Warm Mix Asphalts were introduced into the Specification of Highway Works. Data sourced from the European Asphalt Pavement Association for 2019, showed that: 72.00Mt of WMA was manufactured in the USA, 4.30Mt in France, 1.74Mt in Norway, and less than 1.00Mt in UK.

Research, combined with practical trials of WMA has shown that asphalt mixtures can be successfully manufactured and laid at temperatures of 20 to 40°C lower than hot mix asphalt (HMA). They also provide a number of site safety and productivity benefits, and no compromise on performance. This is achieved by the addition of an additive to the bitumen, either by metered in line dosage or pre blended at the bitumen refinery. The additive can be either organic which lowers bitumen viscosity or chemical which reduces friction at the bitumen/aggregate interface, making it possible to manufacture and lay asphalt at lower temperatures.

Benefits of WMA

1. **Reduced greenhouse gas emissions due to reduced energy in the asphalt manufacturing process.**
   A reduction in CO2 emissions of between 5% to 15%, dependant on asphalt plant settings and other factors.
2. **Improved site safety with reduced exposure to fumes and lower working temperatures for road maintenance workers**
   Potential to reduce fume emissions by 70%. (European Asphalt Pavement Association data).
3. **Reduced expenditure on fuel of between 5% and 15%.**
   Potential £70k net savings on fuel (£PQ), taking into account cost of additive*.
4. **Reduced laying and compaction temperature making it possible to open roads to traffic sooner.**
5. **Increased workability of mix, giving extended fixed and mobile asphalt storage time.**

*Based on a 30°C asphalt plant mixing temperature reduction and anticipated value of asphalt additive materials.

It is the latest example of our commitment to using technical expertise to create more sustainable paving materials. Responding to the challenges faced by modern paving engineers, it is designed to help them complete more work in less time, keep busy roads moving and meet the highest standards of safety and sustainability.

Implementation

Warm Mix Asphalt production shall commence in May 2025 with a phased approach. We will start with the dense base and binder courses, then during June 2025 all close graded asphalt concrete surface courses.

The introduction and use of this material has been discussed and agreed by all three constituent council partners. This demonstrates a commitment to the objectives of the Climate Change Act (Scotland) 2019, as well as internal commitments to development of an environmentally sustainable future.

Key Points

- Mixing temperature reduced by 30°C
- WMA will be manufactured and laid in accordance with the Specification of Highway Works recently published guidance note; Clause 908TS. Permitted WMA mixtures are:
  - Dense base and binder course asphalt concrete with paving grade bitumen (recipe mixtures).
  - Close graded asphalt concrete surface course.
  - Dense base and binder course asphalt concrete surface course.
  - Dense base and binder course asphalt concrete (design mixtures).
  - EME2 base and binder course asphalt concrete.
  - Stone mastic asphalt (SMA) binder course and regulating course.
  - Thin surface course systems.
- HRA material will not form part of this e.g., HRA 30/14 surf 40/60, HRA 55/10 surf 40/60 des, HRA 50/20 bin/base 40/60 mixtures etc.
- Private customers will be notified and included within the scope of this exercise.
- WMA materials will be prefixed with (W) at the material description on the weighbridge ticket.

Performance Monitoring and Data Acquisition

Quarry
Mixing temperature
Ambient Temperature
Despatch temperature
Kg of LPG consumed per tonne of asphalt mixture
Greenhouse gas emissions CO2 (calculated)
Increased manufacturing cost vs reduced fuel cost.

Site
Ambient temperature
Delivery temperature
Paver hopper discharge temperature
Temperature behind paver screed
Compaction temperature
Workability (observation and comment)
Hand laying (observation and comment).

Testing
Bulk density
Air voids content
Stiffness
Deformation resistance
Texture depth
Measurement of volatile organic compounds (VOC's)

May 2025

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COLLACE QUARRY WARM MIX ASPHALT 2025

(non-technical overview)

In an ongoing commitment by Tayside Contracts and our council partners of Angus, Dundee City and Perth and Kinross councils to consider how the services we provide impact the climate change agenda and the commitment to reduce our CO2 emissions to help move towards a net zero objective, we are pleased to advise the introduction of Warm Mix Asphalt materials 'TayLow' into the range of low carbon materials produced at Collace Quarry for more sustainable road surfacing.

Warm mix asphalts are manufactured, supplied and laid at temperatures lower than conventional hot mix asphalts (20 to 40°C less). They also provide a number of site safety and productivity benefits, with no compromise on performance.

Benefits of WMA

1. **Reduced greenhouse gas emissions due to reduced energy in the asphalt manufacturing process.**
   A reduction in CO2 emissions of between 5% to 15%, dependant on asphalt plant settings and other factors.

   Based on projected sales for 2025/26, potential to reduce annual CO2 emissions at Collace Quarry by 109.8 tonnes, equivalent to;

   - taking 25 cars of the road for a year, or
   - 60 round trips from London to New York, or
   - the annually electricity to power 70 homes.
2. **Improved site safety with reduced exposure to fumes and lower working temperatures for road maintenance workers.**
   Potential to reduce fume emissions by 70% (European Asphalt Pavement Association data).
3. **Reduced laying and compaction temperature making it possible to open roads to traffic sooner.**
4. **Increased workability of mix, giving extended fixed and mobile asphalt storage time.**

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May 2025

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Taylow

Benefits of Taylow:

- ✓ Based on project sales for 2025/26, potential to reduce annual CO2 emissions at Collace Quarry by 109.8 tonnes per annum, equivalent to;
  - ✓ **taking 25 cars of the road for a year or**
  - ✓ **60 round trips from London to New York or**
  - ✓ **the annually electricity to power 70 homes.**

Since introduction in May 2025:

- ✓ **1463 tonnes Taylow material manufactured.**
  - ✓ **Saving £1149.23 on LPG.**
  - ✓ **Extra £1983.10 cost on wetfix additive.**
  - ✓ **Additional cost per/T £0.57**
  - ✓ **5.41 tonnes CO2 saved.**

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Tayset®
A greener shade of black

A sustainable road paving system

1 Asphalt excavated from site

2 Unprocessed waste asphalt

3 Crushing and screening waste asphalt

4 Minimum CO_2 emissions during cold mixing

5 Mixed Tayset® ready for use

6 Laying on site

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Questions

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