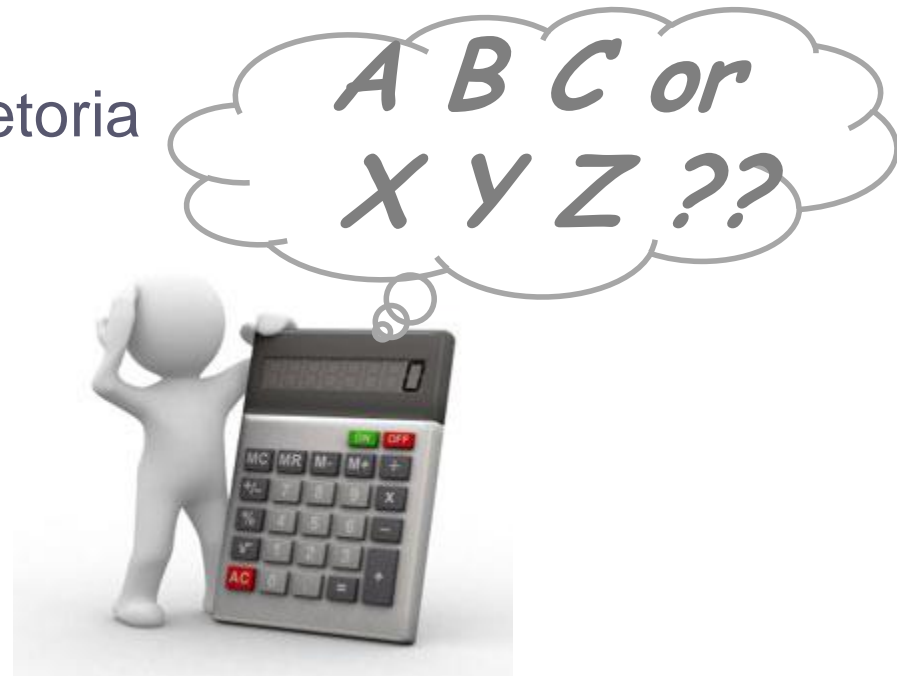# NLA NATIONAL PTS FEEDBACK WHAT ARE THE TRENDS TELLING US…

34th RPF

CSIR Conference Centre, Pretoria

Barry Pearce

14th November 2017

Discussion to include…

- Intro & general comments
- What are the Numbers
- StDev trends
  - Asphalt
  - Granular
  - Aggregate
  - Binder
- 2018 & future planning
- Concluding remarks

Intro & General comments

- Used StDev & linear trend lines as evaluations tools
  - StDev a good indicator as it's a relative result
- What are we looking for
  - *a <u>decrease</u> in StDev & dipping trend line (left – right)*
- Some results *may* need to be assessed separately
  - If material type changes
    - Granular with/without PI
    - Asphalt WC vs BTB

- Require at least 3 sets of results to get a sense of the trend
  - With more results the trends are becoming more apparent
  - Limits or acceptable variances can then be more accurately determined
- Insufficient results to depict a trend for Concrete
  - Only 2 rounds completed by end 2017
- Some additional tests methods have been added along the way resulting in less data for some methods
  - DSR – report to be included in PenBit
  - Gyratory – included in AS round
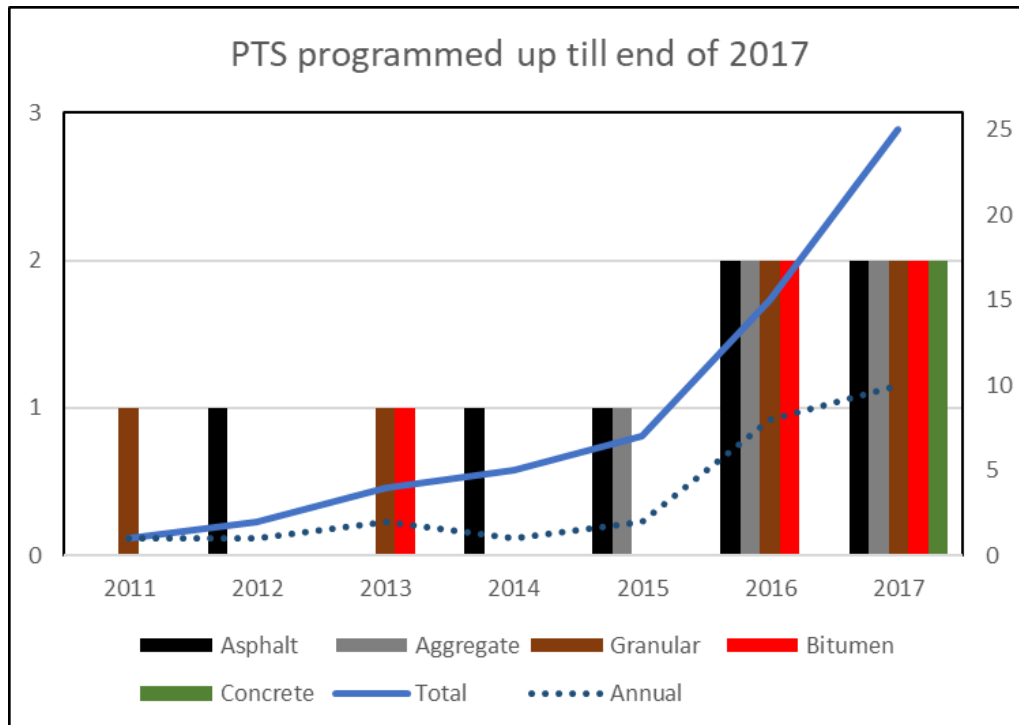 - Plus others e.g. AG22

Sample prep

- A huge THANK YOU to the industry partners assisting in donation of materials plus splitting & preping the samples for 2017

- Process takes between 3 – 5 days to complete per round

- **National**   AS
- **Afrimat**   AG
- **Afrisam**   GR
- **Gautrans**   GR
- **Gomes Sand**   GR
- **Sasol/Tosas**   BT
- **GoConsult**   CO

National, Afrimat, Much & GoConsult have confirmed assistance for 2018

What do the numbers look like?
PTS undertaken

PTS programmed up till end of 2017

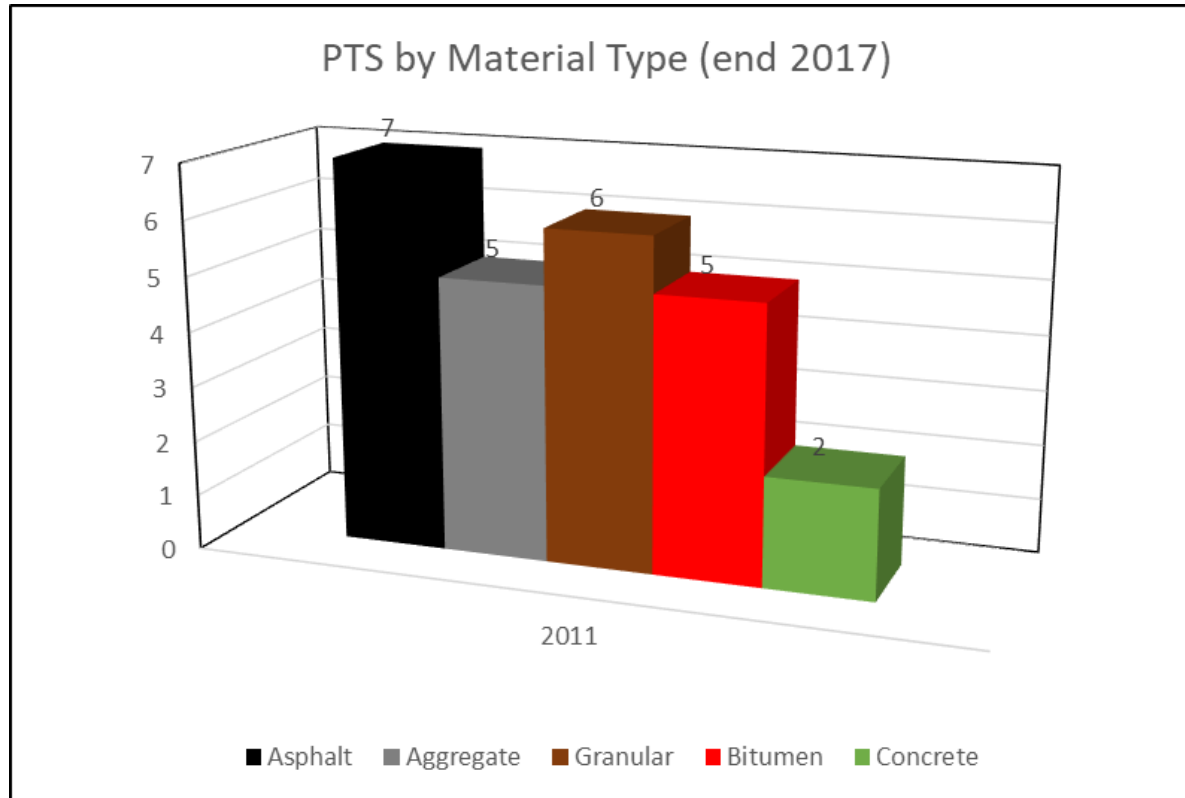Legend: Asphalt, Aggregate, Granular, Bitumen, Concrete, Total, Annual

- 10 rounds for 2017
- Up from 8 last year
  - All samples delivered
  - 25 rounds in total
  - 7 reports issued 2017
  - Busy with AG report
  - CO & AS still to close
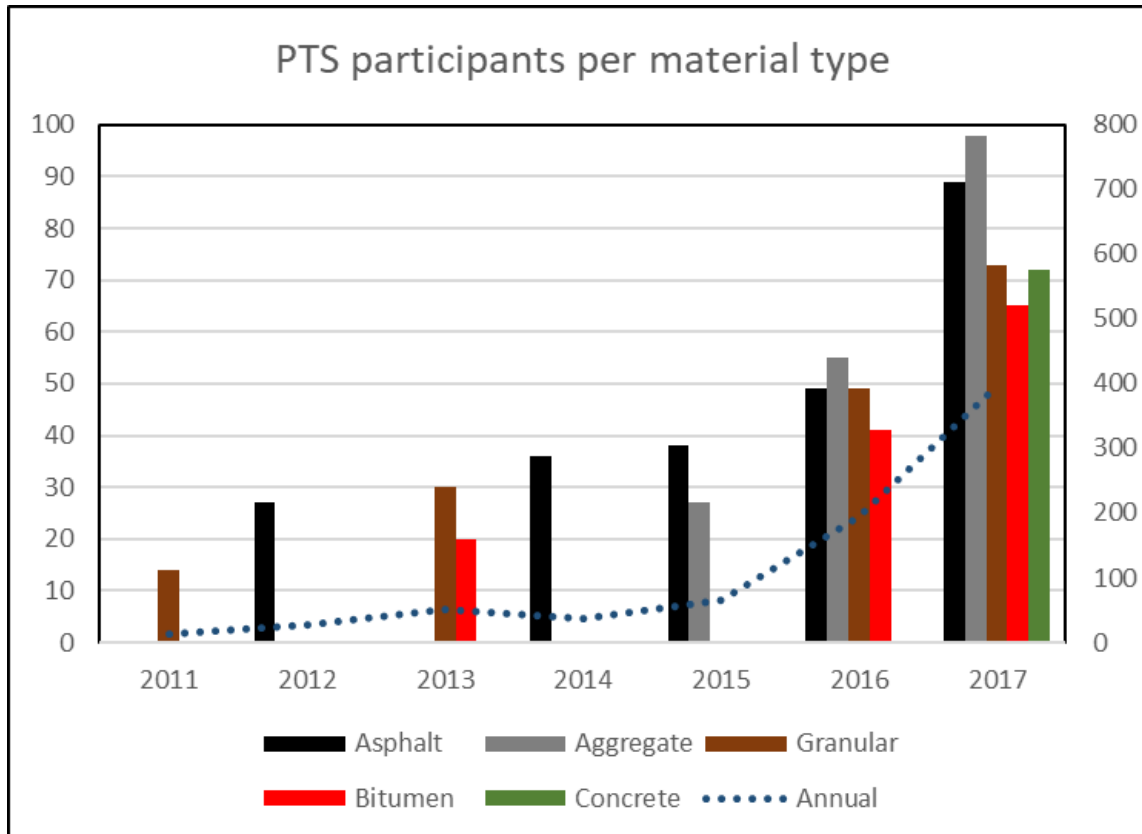
What do the numbers look like? By material type

PTS by Material Type (end 2017)

- Asphalt 7
- Aggregate 5
- Granular 6
- Bitumen 5
- Concrete 2

What do the numbers look like? Laboratories participating

PTS participants per material type

- Asphalt
- Aggregate
- Granular
- Bitumen
- Concrete
- Annual

783   total submissions
2011   14
- 2017   397
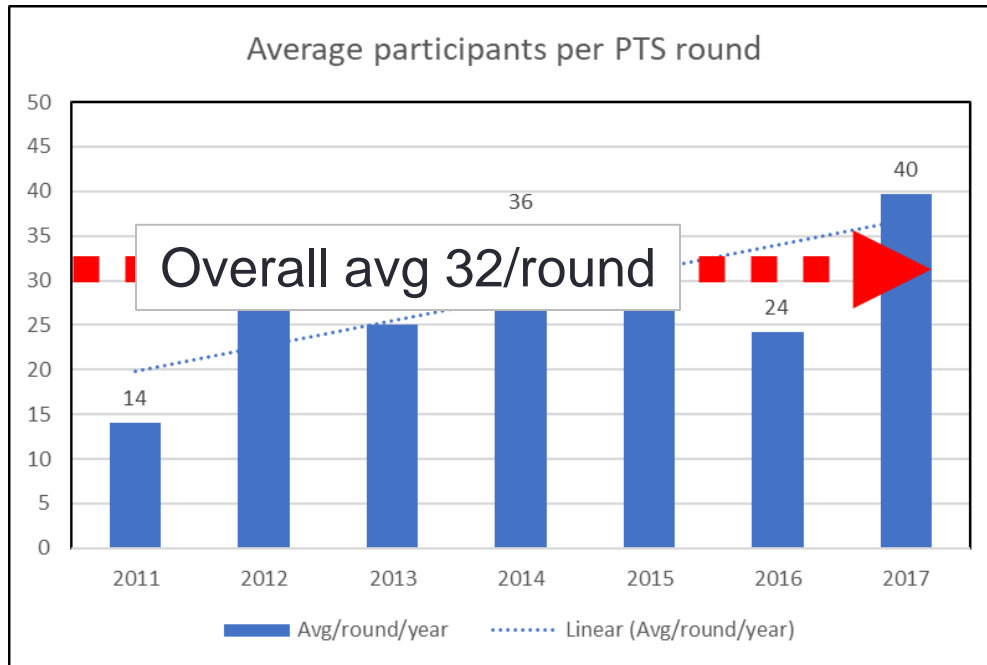- Overall Avg   32/round
- 2017 avg/round   40

What do the numbers look like? Average Laboratories participating/round

Average participants per PTS round

Overall avg 32/round

Limited to 64 max due to splitting process used.

- Good growth shown in 2017
- Avg 32 participants/round since 2011
- 2017 average participation = 40/round
  - Well up on previous years (24) & growing

What do the numbers look like? OB's & % of z-score ±1,000

- Obvious blunders
  - Minimal since 2016 when OB's were first introduced.
  - Some due to incorrect reporting format (BRD vs BD)
    - Due to not reading the protocols
  - Only applied when plainly obvious its an error.
  - All other cases included in stats analysis & taken care of by weighted robust stats approach.
- % z-scores ±1,000
  - On average ± 70 %
  - Still some errors that could improve this figure *slightly*.
  - Typical value for this type of statistical analysis

Typical errors encountered

- Rule No1 for PTS participation
- **FOLLOW THE TEST METHOD *specified* to the letter!!!**
  - Inaccuracies often attributed to this issue
  - Renders PTS less valuable or results in an OB classification
- Transfer errors
  - Particular in grading results
- Report results as specified in method
  - 0 % vs 0.4 % can skew the results analysis
  - Can give an incorrect consensus mean
- Do in-depth Trend analysis of your performance
  - Always above or below average
  - Always an OB
  - Difference personals performances monitored
- Finally **do the same method in your daily routines**
  - Reduced disputes & results in better quality results

AG trends   (on 6 sets of results)

Method	Trend	Avg StDev
ALD	↑	0.5 mm
FI	↑	2.2 %
SE	↑	11.5 %
ACV	↓	4.4 %
10% FACT	↓	67 kN

GR trends   (on 6 sets of results)

Method		Trend	Avg StDev
LL		↑	3.3 %
PL		↓	2.3 %
LS		↓	1.0 %
PI		↓	3.2 %
OMC		↓	0.5 %
MDD		↑	42 kg/m^3
%DD	A	↓	0.6 %
	B	↓	0.8 %
	C	FLAT	1.1 %
CBR 100 %		↑	34 %
	95 %	↑	22 %
	90 %	↓	13 %

BT trends   (on 5 sets of results)

Method	Trend	Avg StDev
Pen Bit	↑	7.4 dmm
R&B	FLAT	1.1 ^{o}C
Vis 60 ^{o}C	↓	50 Pa.s
135 ^{o}C	↓	0.106 Pa.s
RTFOT		
Mass Δ	↓	0.07 %
Vis 60	↓	83 %
R&B	↓	2.1 ^{o}C
> R&B	↓	1.6 ^{o}C
Spot Test	↓	10 %

AS trends (on 6 sets of results)

Method	Trend	Avg StDev
BD	↓	16 kg/m^3
MVD	FLAT	9 kg/m^3
Stab	↑	2.0 kN
Flow	↓	0.6 mm
Binder %	FLAT	0.1 %
Bit Abs	↓	0.2 %
VIM	↓	0.8 %
ITS	↓	303 kPa

Overall trends

MATERIAL	INCREASING	FLAT	DECREASING
AG	3	-	2
GR	4	1	7
BT	1	1	8
AS	1	2	5

- The majority of StDev are on the decrease
  - 22 vs 9
- Into the future it is expected these values should decrease further
- CO results will be included from 2018 once 3 sets of results have been submitted
  - Currently only on the 2nd round.
- There are still some areas that require attention
  - Some very basic like differing interpretation of methods
  - Some more complex due to method itself

2018 & Future plans

- All reports now uploaded onto NLA website.
  - No more emailed reports
  - Will need to log onto website to access reports
  - Password assess only
- Still hoping to do online submission on asphalt round this Nov.
  - If results entered incorrectly, analysed as submitted
  - To assist in quicker turnaround times for report to be published

- Looking at adding MatCivils PTS added to NLASA ISO 17043 accreditation schedule into 2018
  - Require some additional info before adding to schedule
  - Witnessing of sample splitting

In closing… as always

- **Purpose**
- to *improve consistency* of results ***between*** labs
- Assist in identifying your own internal areas that require attention
- addressing these issues
- Improving the consistency of the methods being used between laboratories
- Requirement for ISO 17025

- Building towards a more *professional laboratory environment* that will be seen as being
- Trustworthy
- Honest
- Quality driven

Keep at it – we're making progress !!

Thank folks…