Real World Impacts from Odorous Industry
## Chris Bydder & Jim Demetriou

Odour Surveillance

- Primary method used by EPA to monitor for odour
- Methodology developed from 2001, consistently applied from 2008 refined 2014 – 2016
- Officers patrol a set route at predetermined locations in and industrial area (Random Surveillance) **OR**
- Officers patrol a series of locations at set distances downwind from a target site (Plume Assessment) **OR**
- Officers locate and define plume extent (Dynamic Assessment)

Random surveillance example

Purpose is to characterize odour sources in the precinct and determine their level on contribution to the overall odour "fingerprint" of the region.
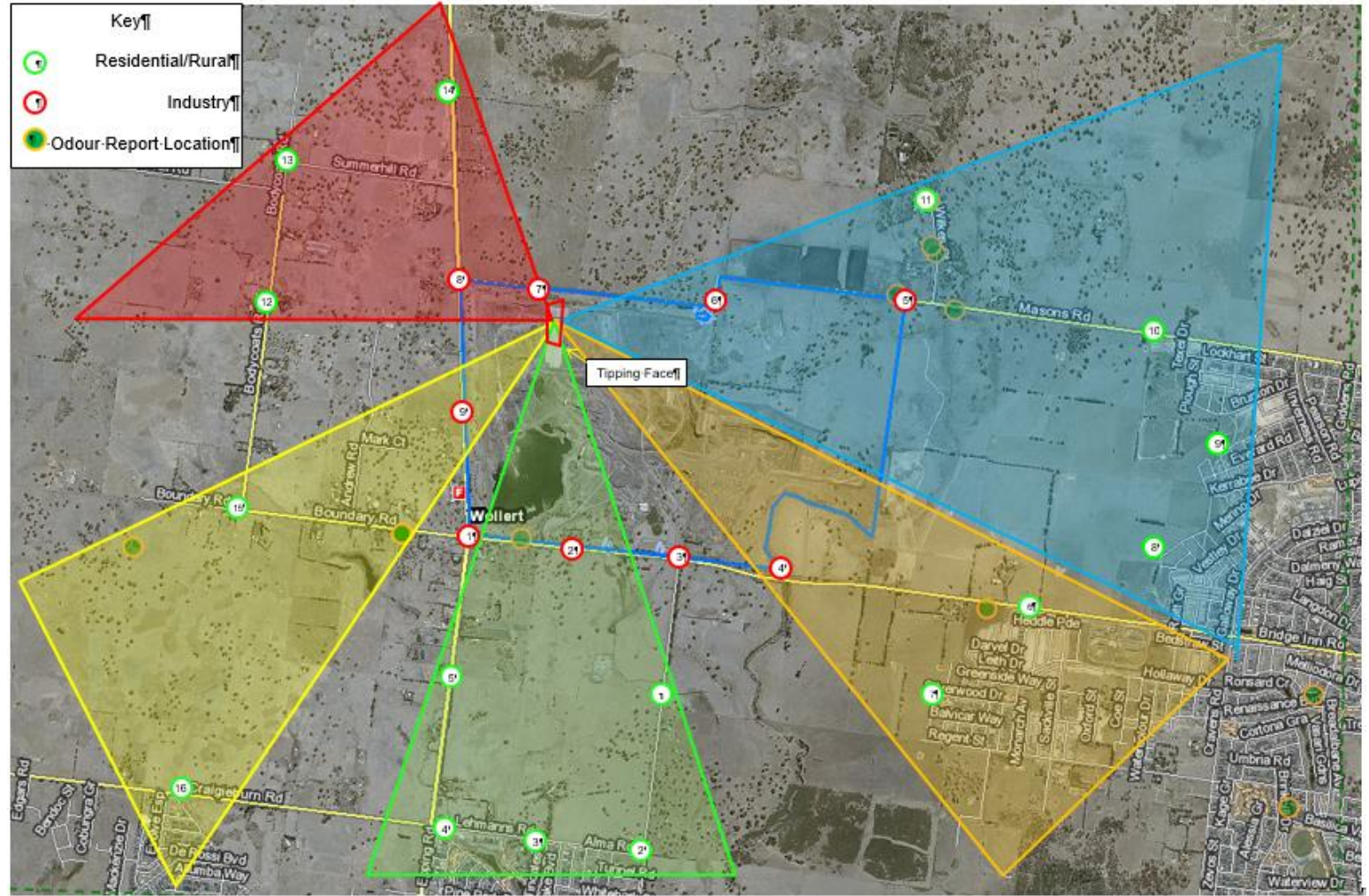

Brooklyn Odour Monitoring Route
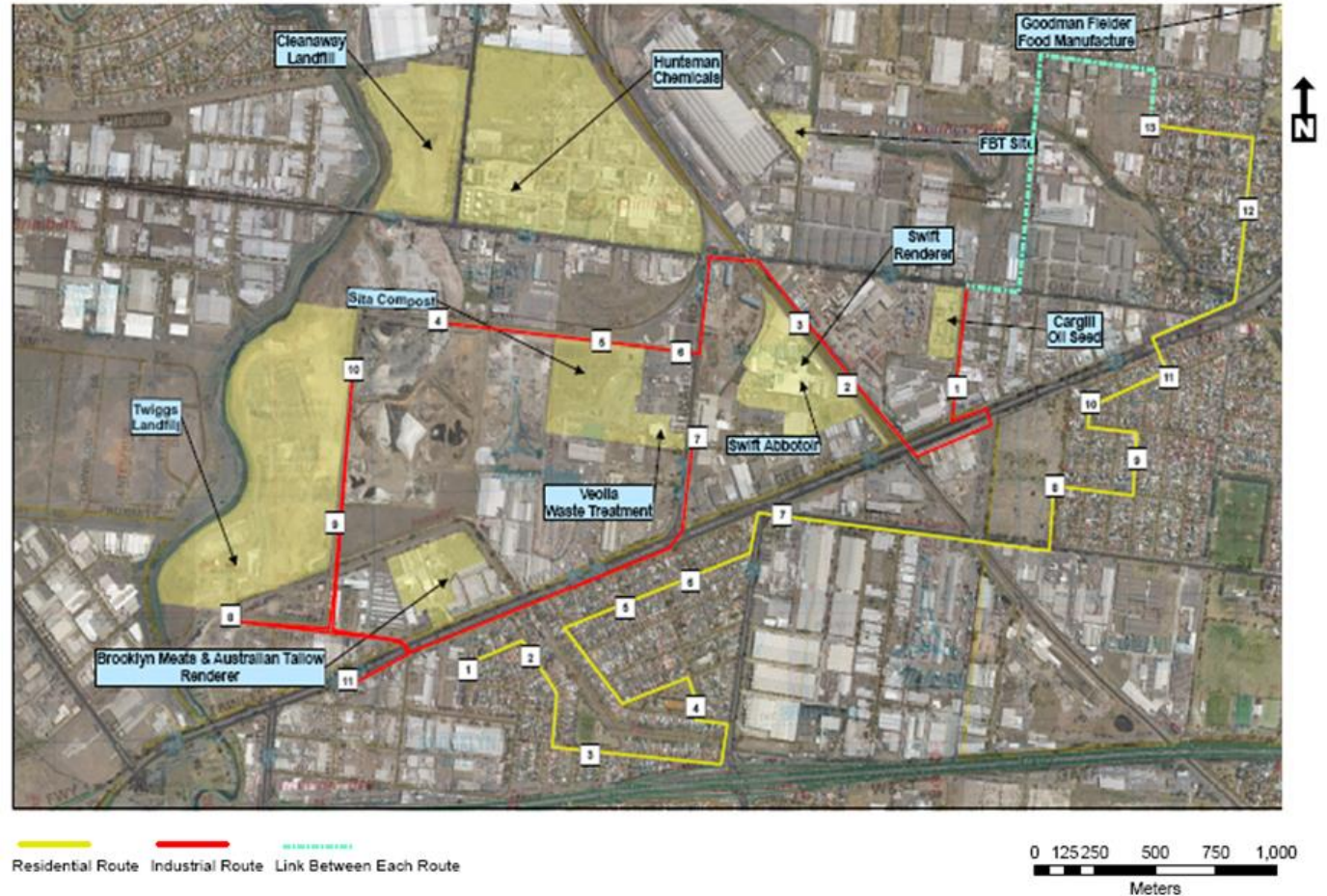
Wind Biased assessment example

Purpose is to determine the extent and frequency of odours **downwind** of the landfill to inform on appropriate buffer distances.
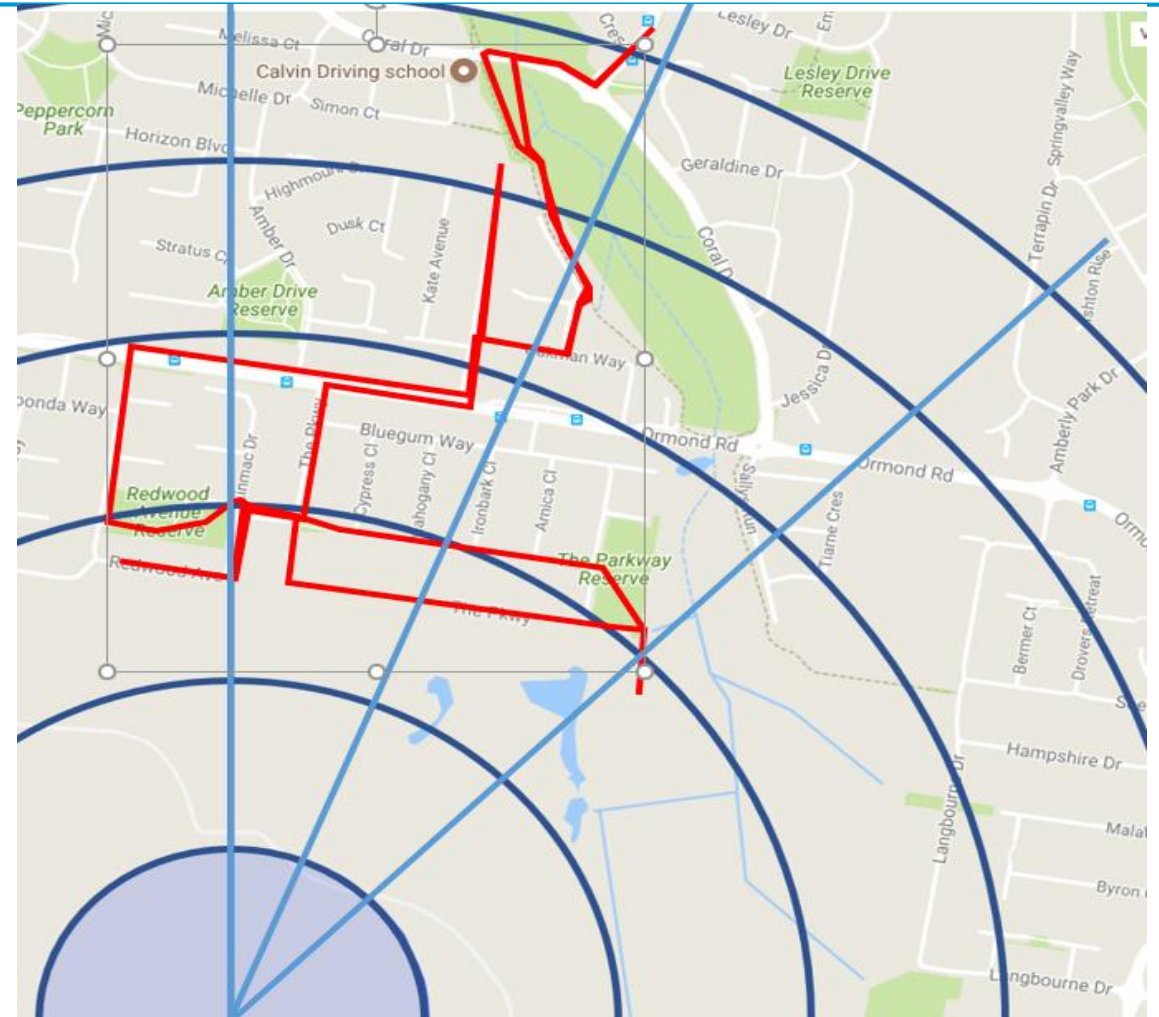
Must be repeated 15 to 20 times

Dynamic Plume Assessment

Purpose is to determine transition point of the odour plume from weak to strong

- plume traced dynamically,

- moving across the plume

- perpendicular to the wind direction

- towards the source

- notes made whenever odour is observed.

EPA's odour surveys

- Approximately 1000 odour surveillance rounds conducted between 2001 and 2017

- 86 around municipal landfills

- 335 around composting facilities

- 227 around rendering plants and abbatoirs

- Thousands of individual odour assessment checks at each point during the surveillance rounds.

Odour survey methodology

- Set survey route
- Set points around the survey route at a spread of distance and location
- Surveys conducted across all weather conditions, days of the week and times of day.
- Officer stops at each point during the survey and makes an assessment.

Odour assessment

- Odour strength

- Odour character

- Wind speed

- Wind direction

Odour strength

Odour Strength	Odour Strength	Rating
Strong	Recognisable, easily detected while walking and breathing normally. Always aware of it, no effort needed to smell it.	S
Weak	Detectable, not easily identifiable, need to stand still and inhale into the wind or make an effort to smell it	W
Not detectable	No odour	0

Odour character

No.	Descriptor	10	Herbal, green, cut grass	No.	Descriptor	29	Silage
01	Fragrant	11	Cooked vegetables	20	Paint-like	30	Compost
02	Perfume	12	Garlic, onion	21	Petrol, diesel, kerosene, solvents	31	Musty, earthy, mouldy
03	Sweet	13	Sea/marine	22	Ammonia/Urine	32	Rubbish/Garbage/Waste
04	Fruity	14	Fishy	23	Rotten egg, sulphurous	33	Rancid
05	Nutty/Grainy	15	Woody, resinous	24	Gas-like (i.e. Landfill Gas))	34	Putrid, foul decaying, vomit
06	Coffee-like	16	Burnt, smoky	25	Tar-like	35	Dead animal
07	Spicy	17	Medicinal, ether-like, anaesthetic	26	Metallic	36	Manure
08	Meaty (cooked)	18	Chemicals	27	Oil, fatty	37	Sewage, septic
09	Raw meat, blood-like	19	Fibreglass resin-like	28	Sour, acrid, vinegar	38	Other (give details)

Source Apportionment

Industrial sources linked to odour observations:

Compost odour observed X

A lot of data

- Large data set

- Originally used to target compliance activities or to inform on environmental performance on particular industries or industrial areas.

- What else can it tell us?
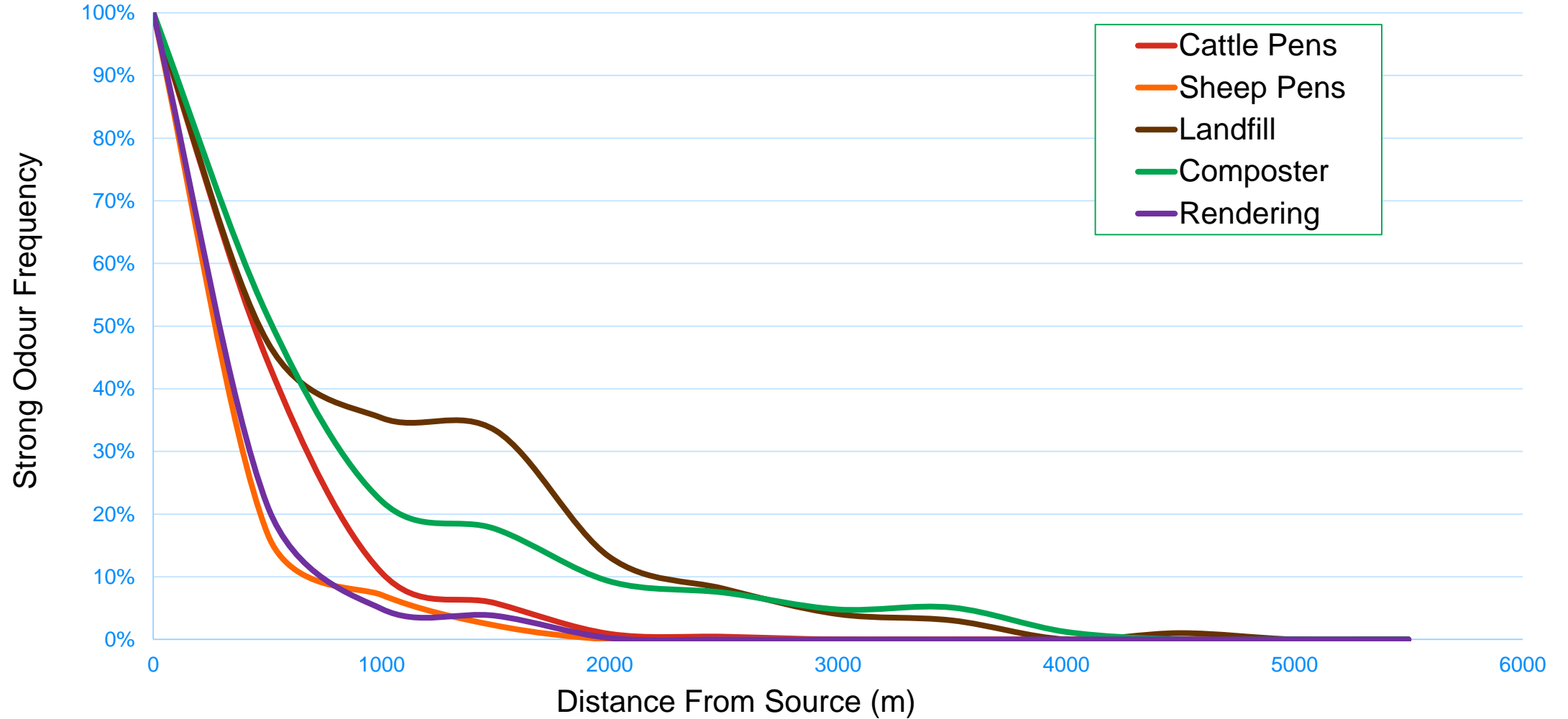
Odour frequency of detection

- % of surveys a particular odour source was detected **down wind** of the source

- Strength of odour detected as a function of distance **down wind** of the source

What do we see?

Persistance of Odour Plume - Open Windrow Composting
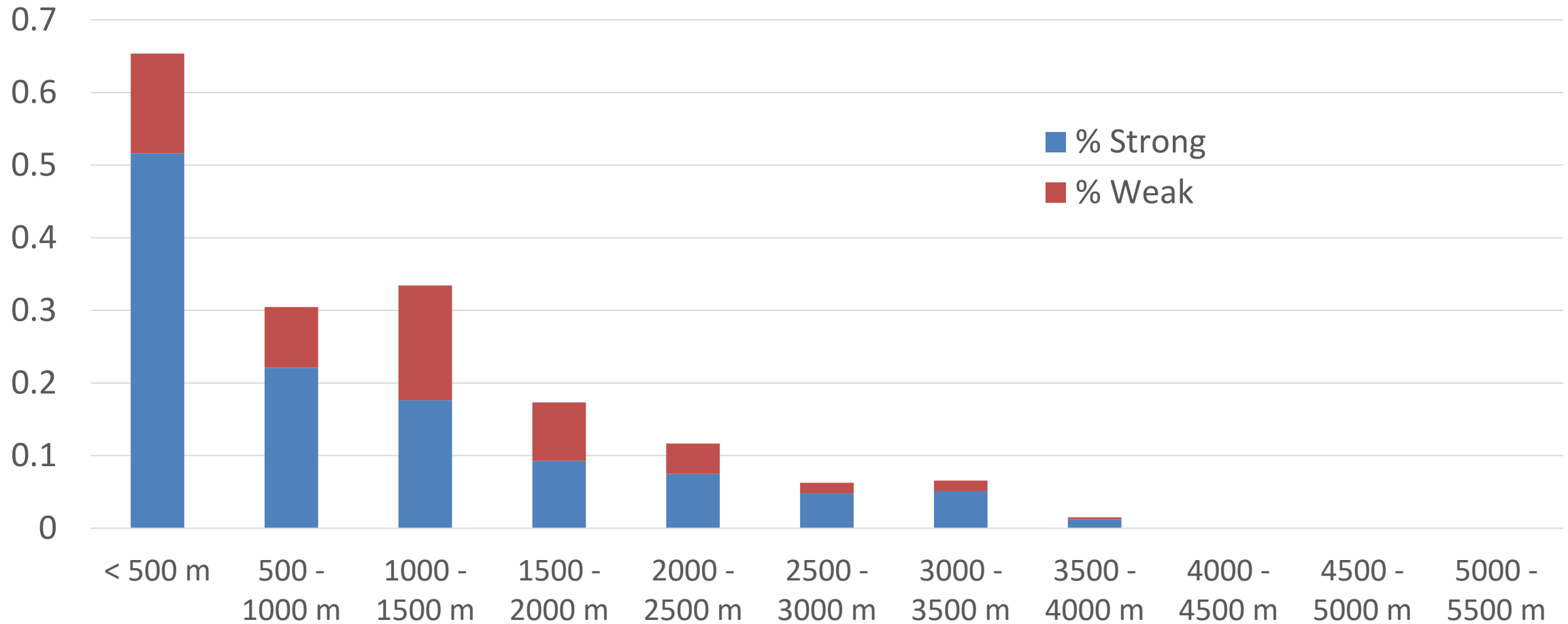
How do industries compare?

How can we use the information

- We know the frequency and extent of odour downwind from a particular source type.

- Using meteorological data we can predict the frequency of exposure at a given receptor

- Validate and/or corroborate findings from odour modelling data

Further work

- Currently using results to inform on sensitive use buffers.

- Refine approach to field odour assessment including calibration of modelling results .

- Establish a national method for conducting in field odour surveys.

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