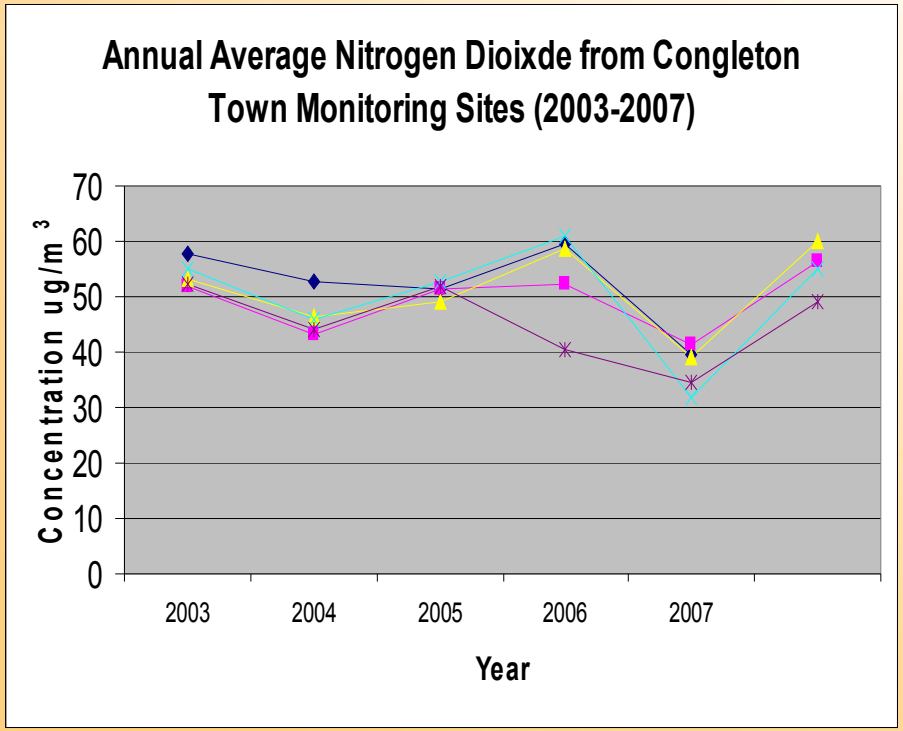
# Appendix 2
# Local Air Quality Management
# Cheshire East Council

# Air Quality Challenges in Congleton Town

- Congleton Town experiences some of the poorest air quality in Cheshire East
- Levels not reducing as anticipated
- Statutory Duty to declare Air Quality Management Areas
- Action needed



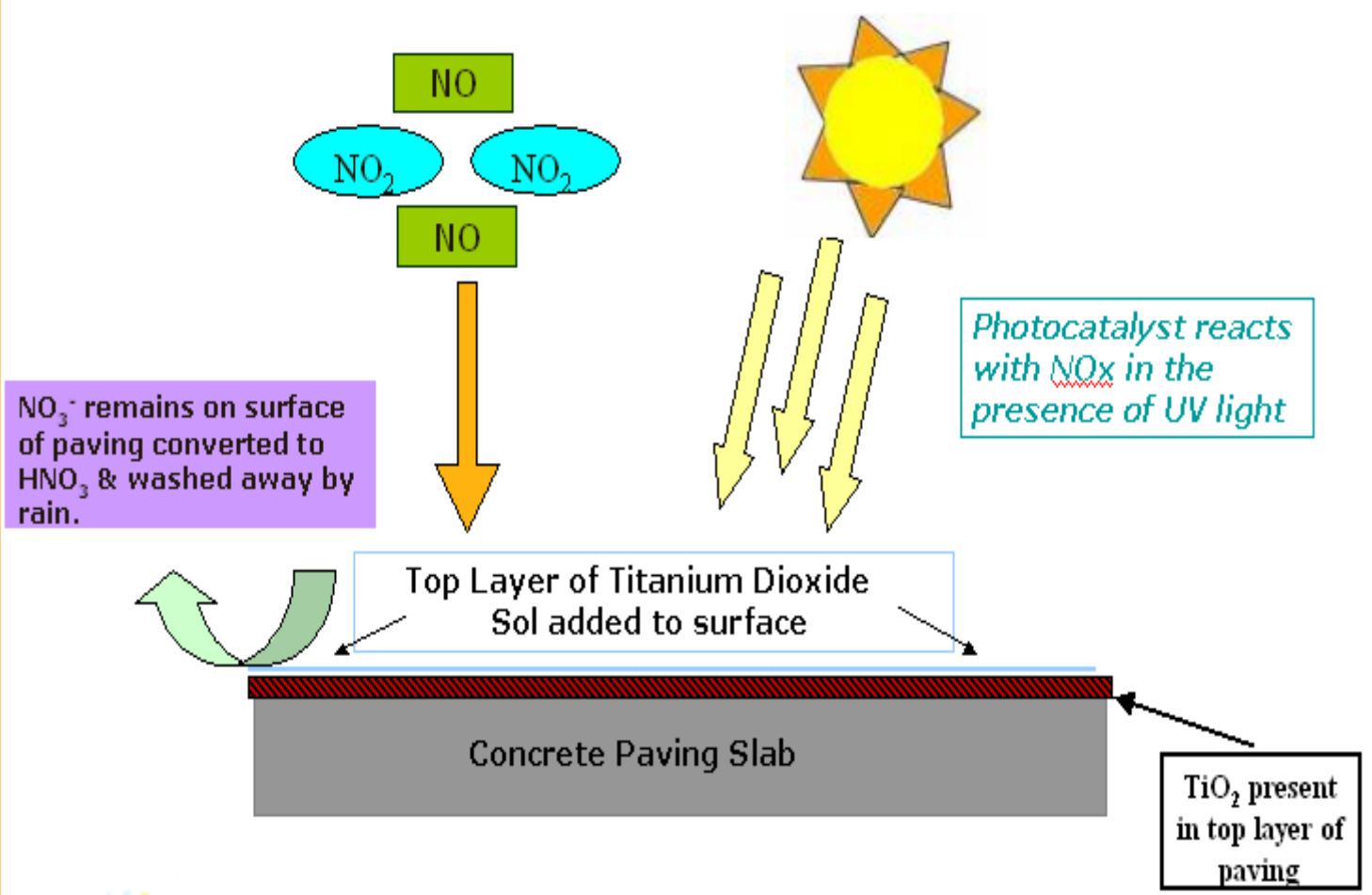
# Local Air Quality Management

- A number of AQMA's declared in 2005 for breaching the annual mean $NO_2$ Objectives.
- Road traffic predominant source of emissions
- Nitrogen Dioxide concentrations will fail to meet the 2010 Objective
- The Action Plan produced in 2007.

# Air Quality Action Plan

- Focuses on reducing nitrogen dioxide emissions
- Details initiatives to address air quality both within the AQMA's and the Borough as a whole.
- Split into three sections
  - General measures to improve air quality Borough wide
  - Area specific AQMA's
  - LTP actions to improve air quality Borough wide

# Mechanisms behind Activa



# Titanium Dioxide Solution (Activa)

- Awareness has in recent years been steadily growing that titanium dioxide in the form of photocatalytic products, appears to be a promising technology for the removal of $NO_2$ from ambient air

- Deemed a suitable mitigation option for Congleton whereby traditional methods or re-routing traffic would not be feasible due to the limiting environments of the AQMA's

- Trials worldwide claimed to be successful

# Study Objectives

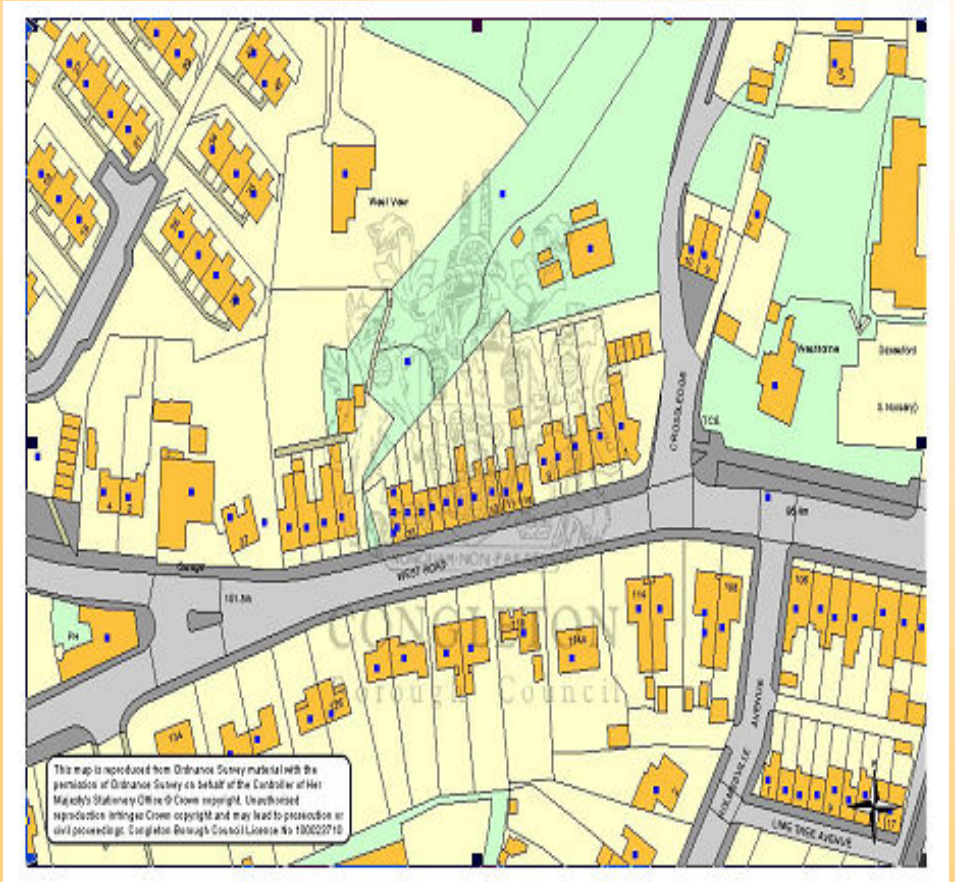
- Determine $NO_2$ concentrations prior to solution implementation
- Determine $NO_2$ levels post intervention
- Determine whether differences between data sets is significant
- Assess its effectiveness with distance from the treated surface

# Study Site

- AQMA within Congleton
- 18 properties
- Predominately terraced opening onto A34
- Typical rush hour congestion

# Study Site

- Existing air quality data
- Sufficient light for the solution to work
- Dispersion is frequently poor for the effect of the solution to be observed

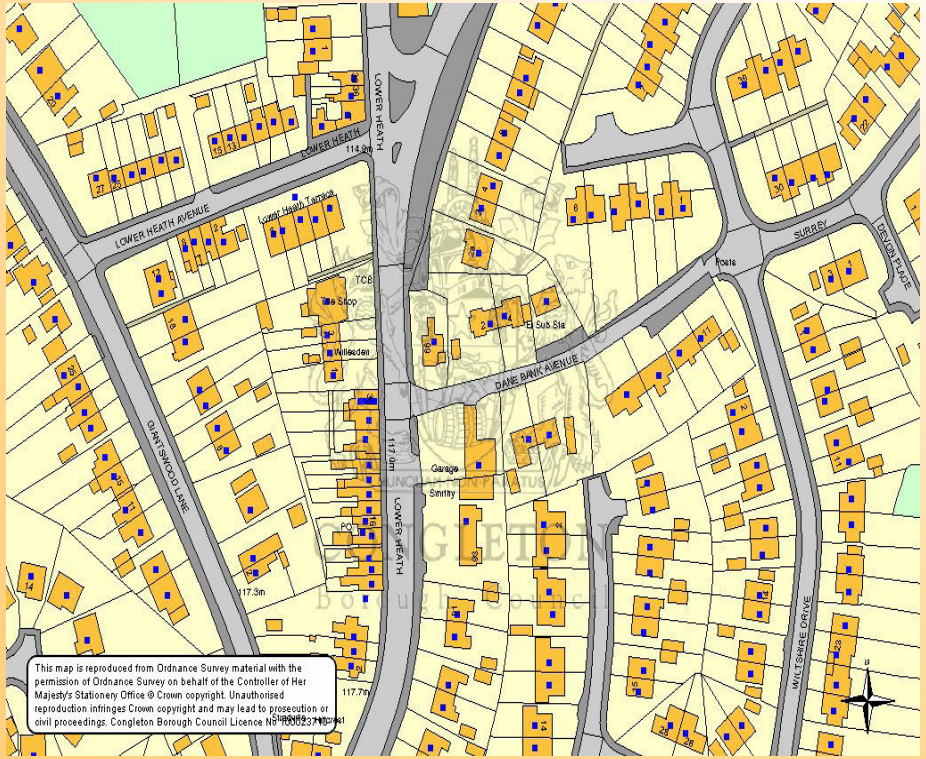


# Study Site

- Annual Average $NO_2$ above objective level

# Background Site

- AQMA within Congleton
- Similar $NO_2$ concentrations to the trial site
- Terraced properties opening onto A34

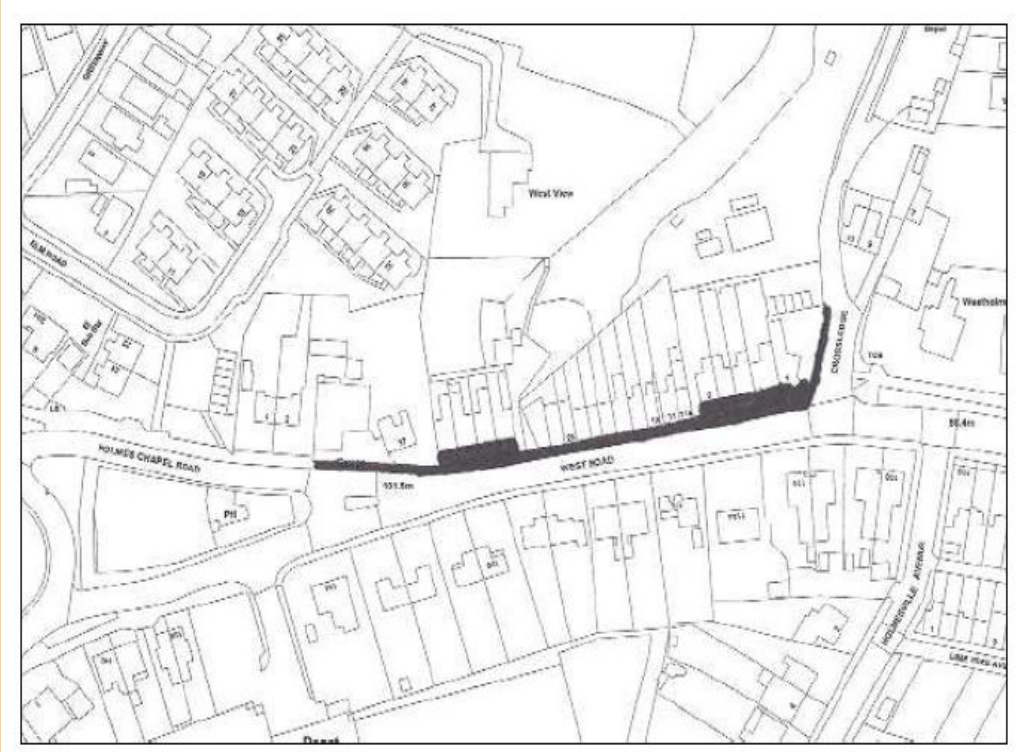


# The Study

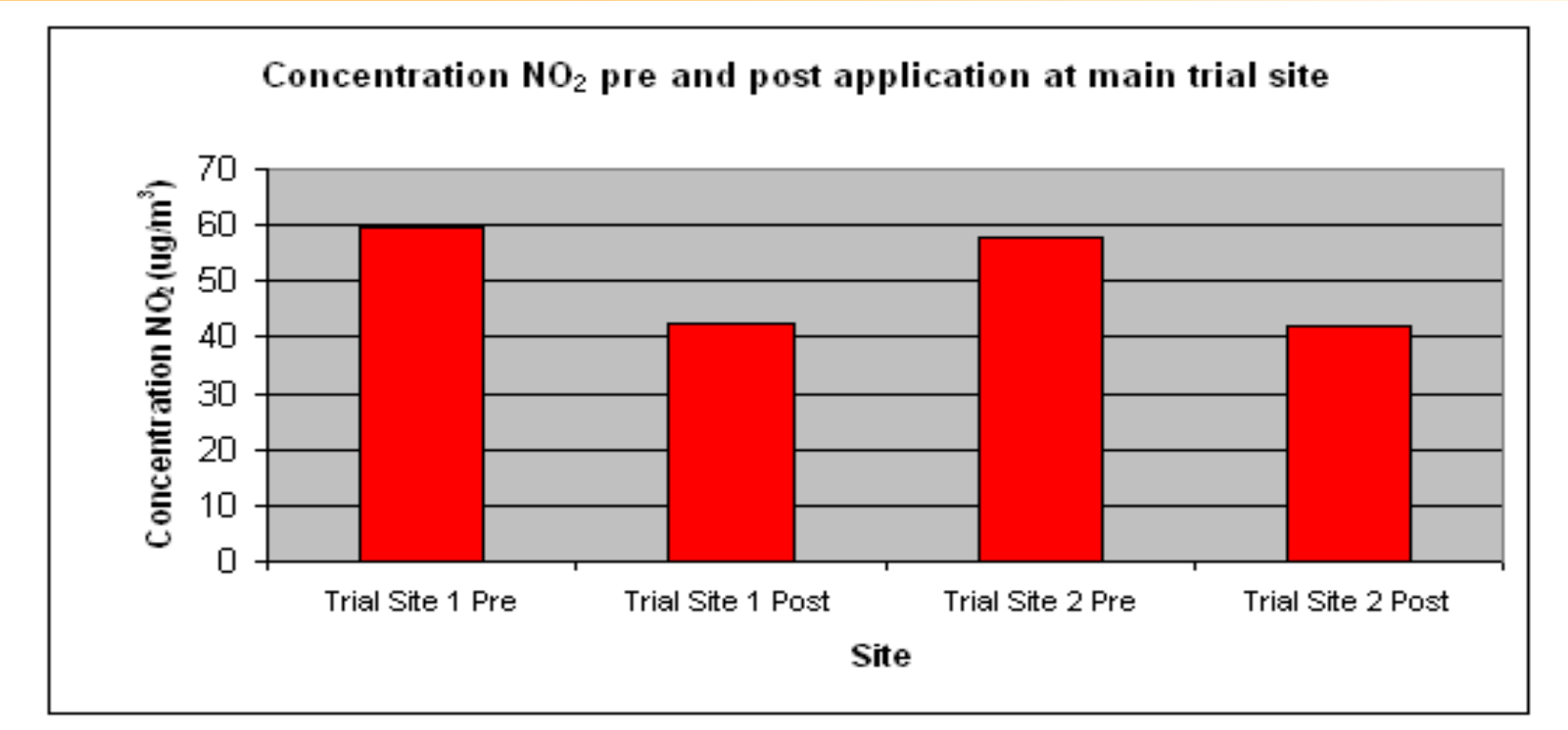
- NOx monitored for six months at study and background sites prior to intervention
- NOx monitored at set distances from the treated surface
- Solution applied October 2008
- Diffusion tube monitoring

# Area Application

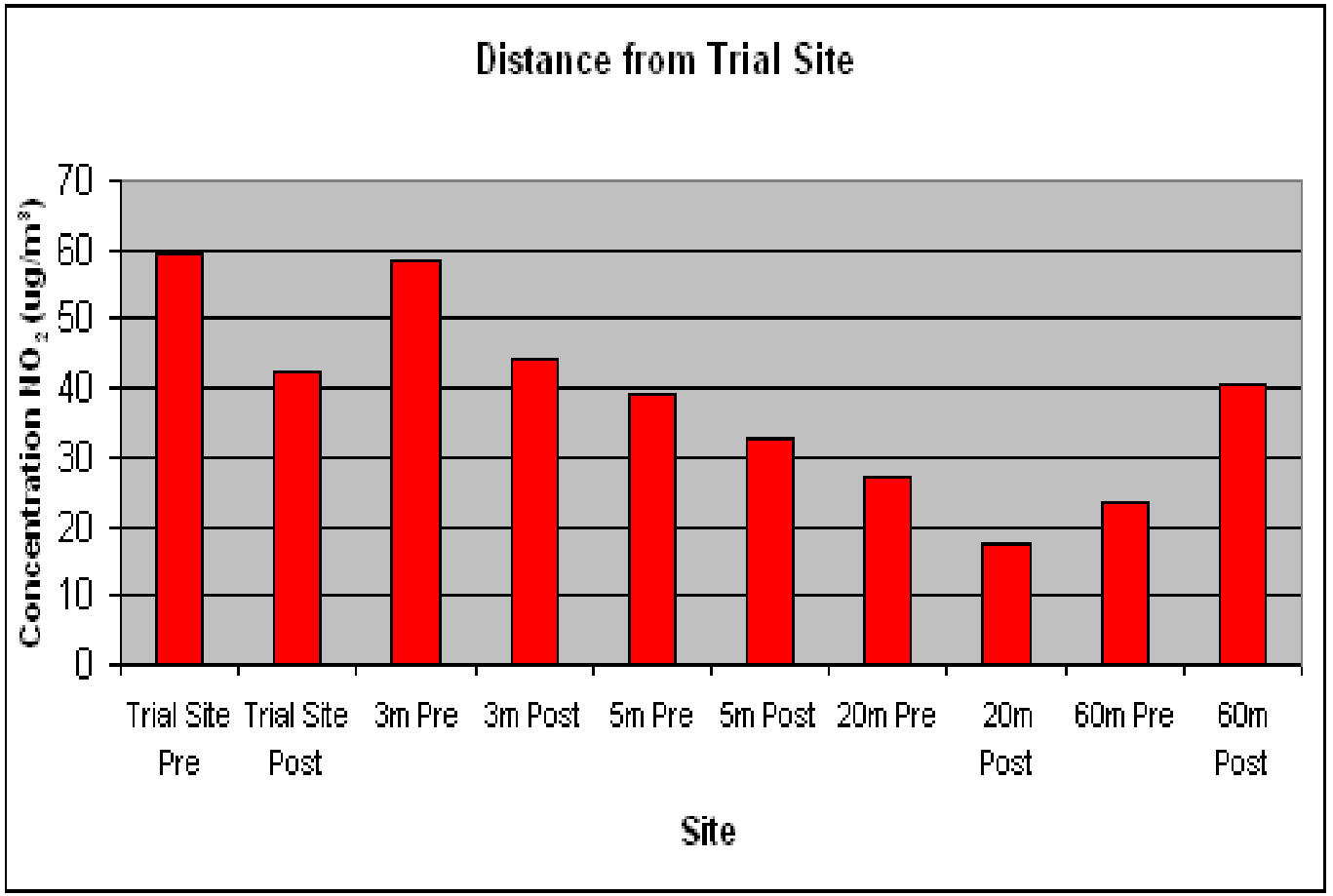
- 200m$^2$ paving
- Residential properties
- Garden walls
- Street lamps
- Road signs



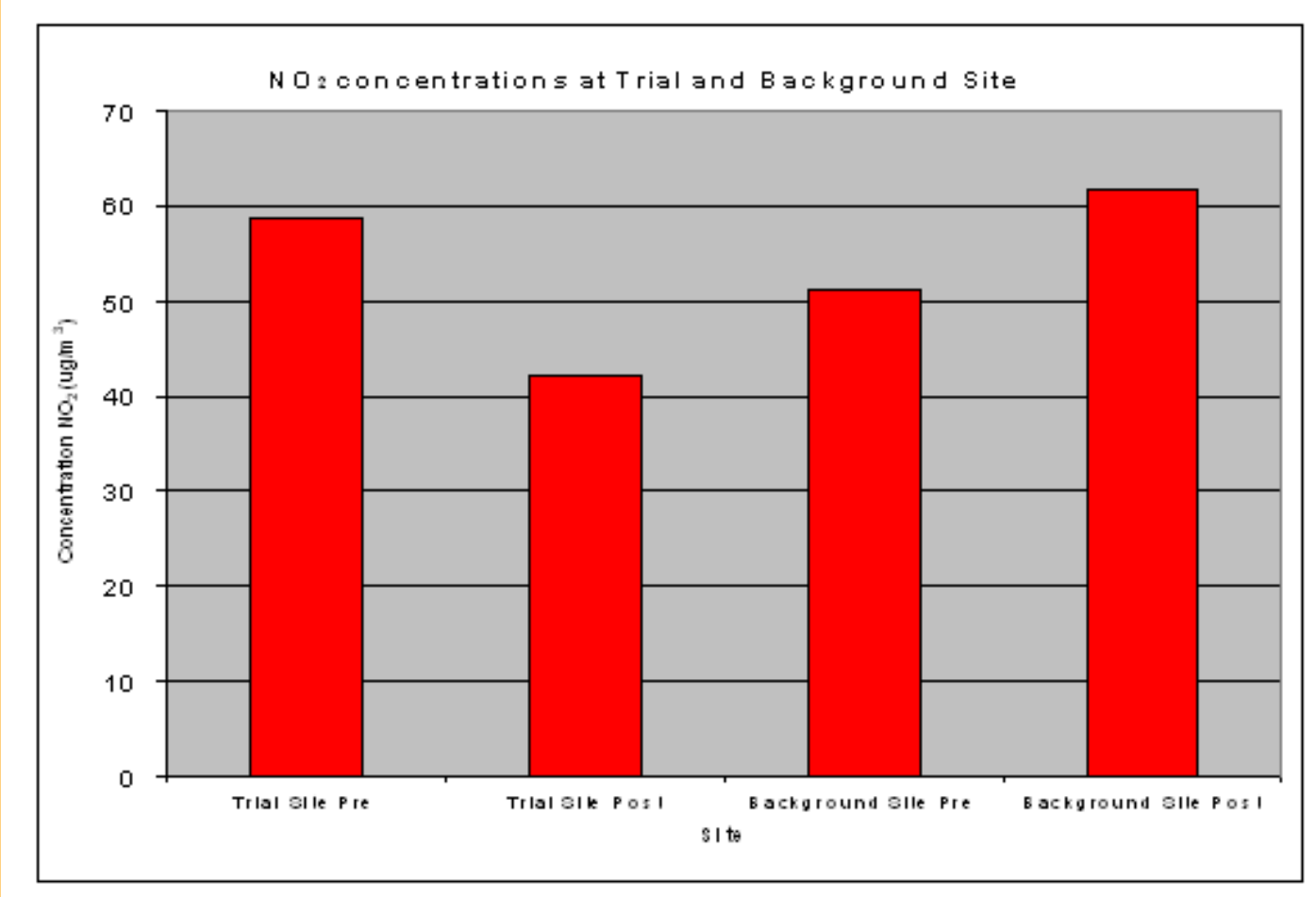
# Results of Activa trial to date



# Distance from Site



# Relationship with Background



# Further Study

- Photocatalytic effectiveness post application currently being investigated to determine effectiveness over 12 months
- Detailed examination of meteorological conditions to include wind speed/direction
- Investigation of levels during daylight and non-daylight hours
- Full 12 months pre and post monitoring using continuous analyser to limit seasonal variation and external factors

# Conclusion to Study

- A reduction of 28% seen at trial site pre and post monitoring to date
- 31% increase seen within relevant background site
- Decrease in concentrations at 3, 5, 20m
- No evidence to suggest solution effective at 60m although several factors within the vicinity of the site may have attributed to the lack of photocatalytic signal
- The use of photocatalytic solution can be an effective measure to be used within the role of LAQM