UKOPA Main Meeting, 20th October 2011

Land Use Planning - Case Study 1
Bedale Nursery

Sharing our futures

Background

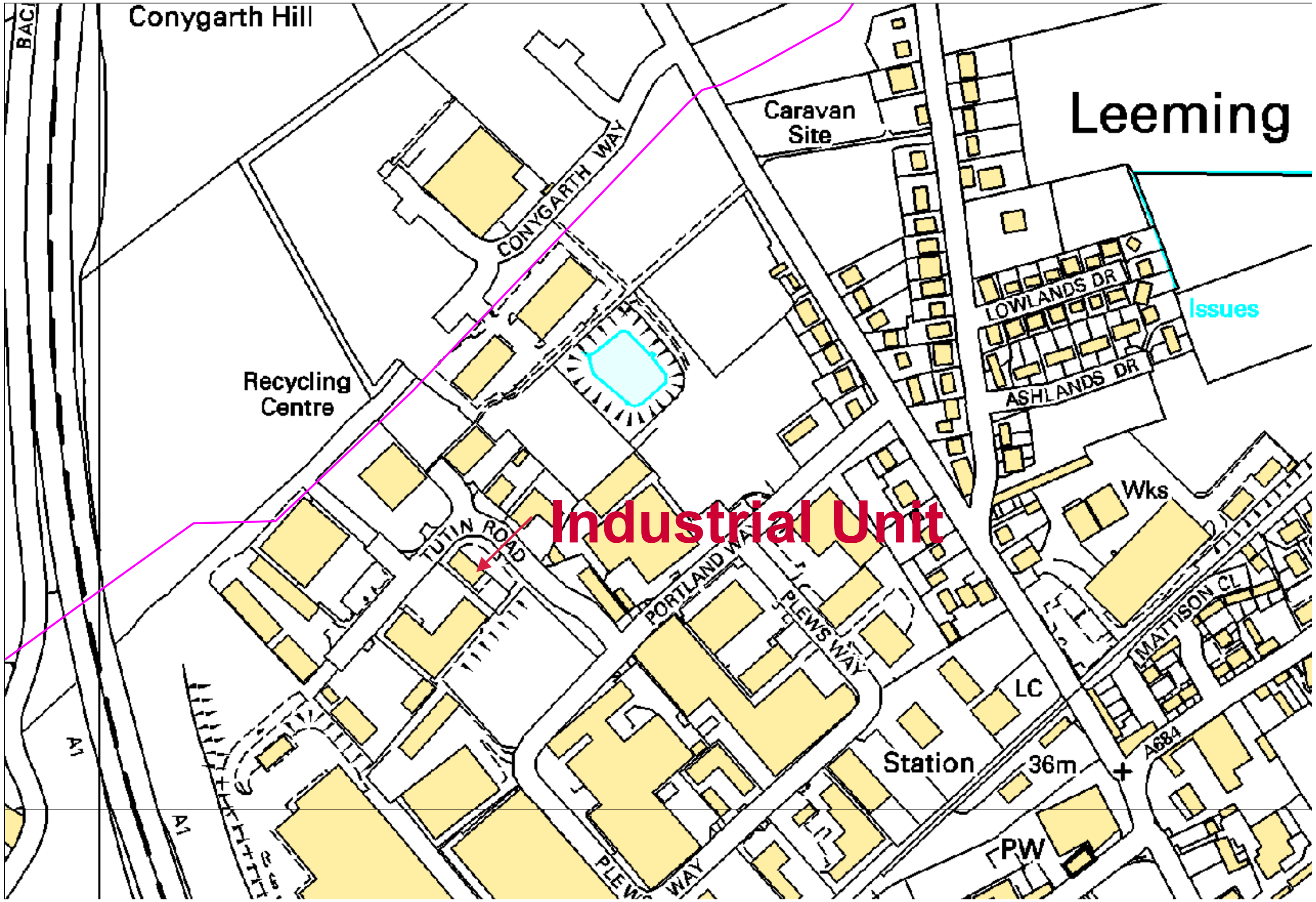
SABIC's Trans-Pennine Ethylene Pipeline (TPEP) is an 8" NB pipeline designed for 1415 psig.

The line runs from Wilton in the north-east to Runcorn in the north-west.

The line was commissioned in 1967.

In May 2009 an issue came to light regarding the change of use of an industrial unit near the town of Bedale in North Yorkshire.

Location



Conygarth Hill
Leeming
Caravan Site
CONYGARTH WAY
Recycling Centre
LOWLANDS DR
ASHLANDS DR
Issues
Wks
Industrial Unit
TUTIN ROAD
PORTLAND WAY
PLEWS WAY
MATTISON CL
LC
Station
36m
A684
PW
A1
A1

What happened and how did it come to light?

During March 2006, a planning application was lodged with Hambleton District Council for the change of use of an industrial unit from a warehouse establishment to a Children's Day Nursery.

Planning permission was granted in June 2006. Although SABIC was listed as a consultee, no consultation took place and SABIC were not made aware of the change-of-use.

In May 2009, Entec were engaged to carry out a safety assessment of a pipeline diversion route for the A1 widening project at Leeming Bar. This highlighted the presence of the Day Nursery within the middle zone of TPEP (would typically result in ‘advise against’ in PADHI).

What happened next? (1)

SABIC checked the planning application on the council website and contacted Hambleton District Council (HDC) to determine what had gone wrong.

HDC responded that at the time of the planning application the TPEP planning zones were not available to them and that the PADHI Plus system was also not available at the time.

This is contradictory to our visit to the Council Planning Office in December 2005, when they Planning Office agreed that they were aware of the pipeline route and the consultation distances.

SABIC met with the HSE in July 2009 (planned annual visit) during which the issue was raised.

SABIC commissioned a QRA to determine what additional mitigations might be appropriate.

What happened next? (2)

The QRA commissioned by SABIC reviewed the extent of the middle zone using the latest modelling techniques and failure data (not necessarily supported by HSE). The nursery remained in the middle zone.

Three options were outlined to reduce the middle zone to 115m or less and therefore make the positioning of the nursery acceptable:

1. Additional weekly foot patrol of the area combined with extra depth of cover
2. Slabbing and marker tape
3. Re-lay in thick-walled pipe

A cost-benefit analysis (to HSE guidance) showed the cost of extra depth of cover, slabbing and thick-wall were all grossly disproportionate.

Where do we stand today?

SABIC initiated weekly foot patrol of the area immediately following issue of the QRA and have been doing this ever since.

HDC have commissioned their own QRA which shows the risks to be tolerable, although on review, many of the assumptions used appear to be optimistic, which results in a much smaller middle zone.

HDC offered the Nursery alternative accommodation local to the site, (outside of the MZ) but this was turned down.

An impasse has been reached whereby SABIC and HDC both believe the situation to be broadly acceptable, but with no agreement from the HSE

Conclusions

Despite our best efforts to publicise our assets and make ourselves available, Planning Offices are still subject to 'Human Error', which can lead to unexpected developments in land use

If a mistake is highlighted, don't expect the Planning authority to 'get the chequebook out' in order to put it right

A QRA is only as good as the assumptions you make and the data you put in. This can lead to very different conclusions for two studies on the same asset

To resolve these issue legally would be a drawn out process and expensive for all parties

Land Use Planning - Case Study 2
Addressing Creeping Development

Sharing our futures

Background

As non-natural gas assets, SABIC's ethylene pipelines are not covered by the IGEM TD1 standard.

Although the pipelines do have clear and specific inspection regimes, there is no framework for carrying out routine reviews of land-use development around the pipeline easement.

Individual planning applications are responded to with reference to PADHI, whilst some major developments have also been specifically risk-assessed, but there is no codal mechanism for reviewing creeping development.

In 2010, the HSE asked us to consider how we would identify areas where we may wish to carry out further risk assessment.

How do you consider 40 years of development?

The initial though was to use local knowledge to generate a list of areas around the pipeline which have been most heavily developed,

But......

How would we know we had not missed anything?

It became clear that a more methodical approach was required.

‘Creeping Development’ – Basis for Methodology

A systematic method is required to identify areas of ‘creeping’ development

Areas where population density has increased may be subject to risk assessment in order to assure the increased risk is acceptable

Method of categorisation could be based on PD8010.

Methodology for assessing level of development (1)

1. Pipeline is to be reviewed by as-built drawing

2. For each drawing:
    1. The level of development in the review period is assessed (low, medium, high)
    2. The original and current population density in the zone of interest is estimated
    3. The Location Class is determined
    4. The distance to the nearest occupied building is measured

3. Any additional mitigation measures are noted

4. Areas of development can be identified using any of the above

Methodology for assessing level of development (1)

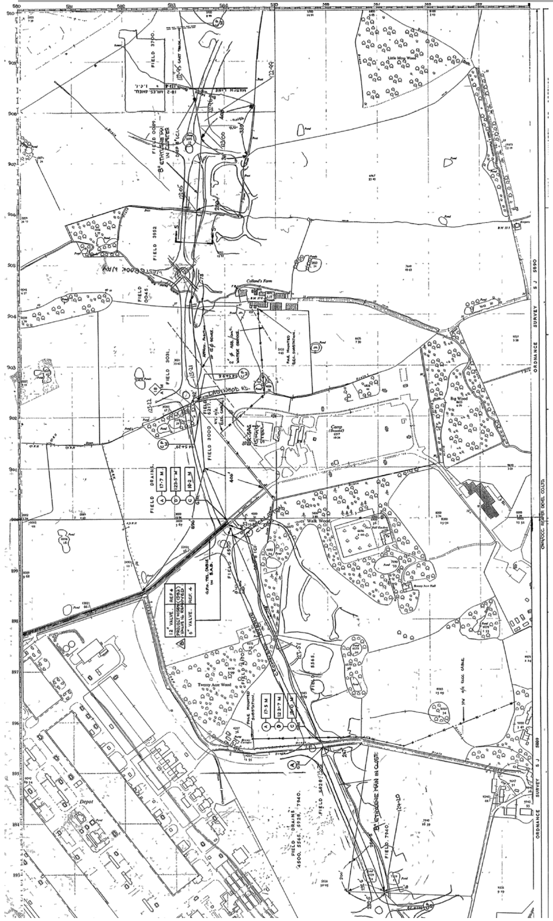
5. A QRA is carried out for a 'generic' section of pipeline using the latest failure rate data

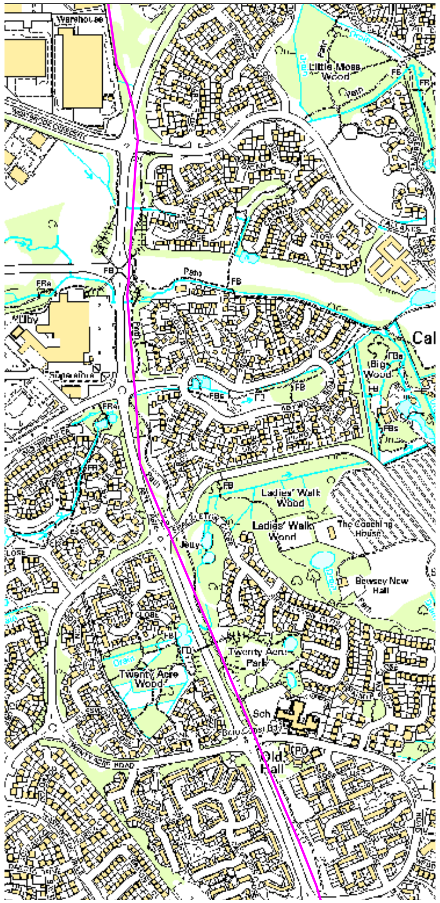
6. The QRA is used to calculate the maximum allowable population density where no additional mitigation is required

7. The population density from the QRA can be compared with those estimated from the drawings in order to identify areas where further detail may be required

It is proposed that, in future, this review should be carried out every 5 years, in line with the Pipeline Process Hazard Review.

Example (TPEP)





Milage	As-bulit Drawing	As-Built Design			
		Land Use	Approx. Population density persons per hectare	Location class	Distance to nearest occupied building m
122.9	EP145 / OL-53128	Agricultural	0.25	1	100

As-Now (2010)							
Degree of Development	Land Use	Approx. Population density persons per hectare	Cluster?	Location class	Distance to nearest occupied building m	Change of Location Class?	Additional Mitigation Measures in place?
High	Residential / Retail	25+	Yes	3	50	Yes	concrete slab at road crossings

Example (TPEP Stats)

Out of 101 as built drawings for the pipeline (220 km):

15 were determined to have a ‘medium’ degree of development

9 were determined to have a ‘high’ degree of development

14 were determined to have a change in location class

11 have a reduction in the distance to the nearest occupied building

Broadly we know there are around 10 – 15% of our as-builts which need some further assessment.

Each of these can be assessed against the latest QRA data to determine if a site-specific assessment is required

A judgement can then be taken as to the priority for site-specific assessment.

Conclusions

A methodical approach can be taken to dealing with long-term changes in land-use around the pipeline easement

The results can be used to prioritise areas for further study

QRA output can be incorporated into the process to ensure that the latest methods and statistics are considered

Conducting a review at regular intervals will prevent a bow-wave of work which will include some costs to carry out specific studies and potentially further costs to install mitigation