The old landfill site is in the foreground and the road occupies the reduced non-development barrier zone.

CASE STUDY

Adding £1 Million of value

THE CHALLENGE

The Blue Lagoon landfill near Nuneaton in Warwickshire was known to be actively gassing when our client proposed developing private housing in close proximity to it.

Our role was to investigate the gassing, design and supervise control methods and ensure the whole development was suitably protected.

In addition, we wanted to demonstrate to the local authority that the planning permission condition they had imposed, putting a 50m development free zone between the landfill and the nearest house, was not necessary.

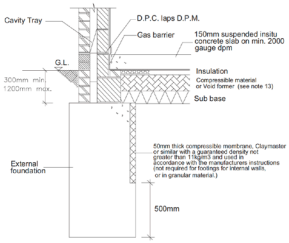
KEY FACTS

- Old landfill site actively gassing
- Risk assessment persuaded local authority to allow 3 more acres to be used for development
- 'New' land worth at least £1M to developers

THE SOLUTION

We carried out a ground investigation including:

- **A geophysical survey and trial trenching to confirm the landfill boundary**
- **Trial pits to assess the ground conditions for foundations and contamination**
- **Rotary open-holes with standpipes for gas monitoring**



Suspended Insitu Slab with Basic Gas Protection within Heave zone

With the boundary of the former landfill reasonably well established, we suggested to the local authority that the main feeder road was built along the border between the landfill and the development site and advised that gas control measures would be required.

We continued with a rigorous investigation into the area below the proposed road and development, removing small areas of waste and filling voids with suitable compacted material.

At this stage a noticeable reduction in the migration of landfill gas was noted. It was decided to progress in phases, starting with the installation of a gas vent trench along the entire landfill / development boundary.

A three metre deep stone-filled vent trench was installed on the landfill side of the feeder road.

The trench included an impermeable membrane on the development side and geo-textile protection to the base and sidewalls.

After installation of the trench, gas monitoring confirmed a significant reduction in the levels of landfill gas entering the development site.

Additional ground investigations revealed old in-filled structures and drainage runs which were acting as gas sources in their own right. These were removed. Additionally, we discovered potential migration pathways from the landfill to the development site; as a result we recommended secondary protection in the form of thirty stonefilled vent columns installed at 2m centres along the landfill periphery.

Monitoring confirmed that the landfill gas migrating from the Blue Lagoon Landfill towards the area proposed for development had been fully controlled.

Our client's planning permission contained a condition preventing development within 50m of the former landfill, as suggested by WMP 27.

GRM believed this requirement was seriously flawed and should be replaced by a risk based approach. We approached the local authority and suggested development could go ahead safely within the 50m zone if the risk-assessment demonstrated that our venting and construction methods reduced the gas concentrations to below acceptable levels.

The local authority approved our risk based approach and took our suggestion that 15m (the width of the feeder road, vent trench and verges) was an adequate exclusion zone and as a result the client increased the area of developable land by three acres.

CONCLUSION

The gas control measures installed were determined from various phases of investigation and monitoring carried out over a period of around two years. The long term view taken by our client, along with the expertise of GRM, enabled a potentially expensive scheme to be designed in a way that offered considerable cost savings.

At the same time our risk-assessment approach increased the acreage of developable land by three acres, adding over a million pounds of land value to the client.