



Case study 8:

## GRM transforms challenging site into successful development

# 8



### KEY FACTS

- ▶ Numerous problems on highly contaminated site
- ▶ Significant threat to environment and human health
- ▶ GRM devised remedial techniques to treat all issues in a phased approach
- ▶ Strategic planning saved client valuable time and money
- ▶ GRM's engineers also designed foundation solutions for the development

### The challenge

The client acquired a former industrial site and intended to develop it for residential use. They commissioned GRM to conduct a full site survey and to provide solutions to the problems unearthed. GRM's site survey revealed a whole host of potential problems:

- ▶ Variable thicknesses of old fill, creating an infirm foundation
- ▶ Site significantly contaminated with fuel, oil and greases
- ▶ Numerous part-filled fuel tanks
- ▶ Basements, sumps and wells full of oil-contaminated groundwater
- ▶ Transformers and a large number of oil drums, some of which contained toxic and carcinogenic PCB oils
- ▶ Elevated levels of Carbon Dioxide
- ▶ Buildings containing asbestos

These issues posed a serious threat to human health, the environment and consequently the success of the development.

structural

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### The solution

GRM remained undeterred, and devised a multi-phased approach for the remediation of the site that was formulated to be cost-effective, as economical as possible, and in line with Government Policy on sustainable development.

Initially, GRM organised the safe removal from site of all oils containing PCBs, fuel from fuel tanks, and oil contaminated water and sludge. By dealing immediately with these issues, GRM avoided any risk to site workers, or any further contamination on site.



The next step was the safe removal and disposal of asbestos from the factory buildings.

Once these measures had been undertaken, the demolition and clearance of all structures began,

under GRM's supervision. The rubble that GRM deemed to be suitable and uncontaminated was crushed and graded for use later on the site as general purpose aggregate. By thinking ahead and recycling such materials, GRM helped save the client thousands in valuable material costs.

Once the structures had been removed, GRM set about bioremediating the contaminated fill. The process of bioremediation utilises naturally occurring bacteria, which break down oils and fuels into water and innocuous gases. When optimum growth conditions for these bacteria are created, they can digest dangerous hydrocarbons and reduce the concentration to an acceptable level, therefore removing the risk to the environment and the development's future residents. All by-products of the process are harmless, and the existing fill was rendered suitable for re-use - which again saved the developer a great deal of money, as well as providing huge environmental benefits.

Following bioremediation, the run-off that had collected in the wells and drainage trenches as a result of the demolition and bioremediation processes was treated until it was safe to be discharged into the sewer. This ensured that no part or product of GRM's remediation process would pollute the surrounding environment.

Under the supervision of GRM's engineers, the treated material was replaced and engineered to finished site levels, creating a stable platform for the development. GRM's engineers also designed a variety of site-specific foundation solutions for the proposed dwellings. Their engineering expertise combined with detailed knowledge of the site, ground conditions, and depth of fill, allowed GRM to identify a unique solution that was safe, sound and easily achievable.

### Conclusion

GRM turned around a site that was highly contaminated and posed a serious risk to the health of its future residents. Not only did GRM manage to render the site safe for development, but through knowledge and detailed planning, they were able to re-use and recycle many of the materials on site – from rubble to previously contaminated fill – saving the client considerable financial costs.

GRM were involved from commencement stage and oversaw every aspect of the project from initial investigation, to remediation, through to obtaining approvals from the relevant regulatory bodies and even into the construction phase.

The project was completed on time and within budget and the site was passed for residential development in accordance with the developer's original plans.

