CORROSION CONTROL ENGINEERING

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Our ref: 5624a/389

Mr. Richard Seddon
Goodman
Level 10, 60 Castlereagh St
SYDNEY NSW 2000

18th July 2008

Email: Richard.Seddon@goodman.com

Dear Sir,

RE: ELECTROLYSIS TESTING
AT 17 O'RIORDAN STREET, ALEXANDRIA

As requested, we carried out stray d.c. traction current testing at the above site, on Thursday 10th July 2008 between 7.30am and 9.00am (peak hour time).

THE ELECTROLYSIS PROBLEM

Most of the d.c. current to power the electric trains returns to the railway sub stations via the rail lines, the desired path. However, some leaks to ground and in returning to the substation via this path can be picked up (and discharged) from metallic structures, in or on the ground, leading to possible electrolysis type corrosion problems. The problems can be significant if:

1. The metallic structures are close to the electrified railway lines and are large (or long) enough.

2. The stray traction current leakages to soil are of sufficient frequency and magnitude to cause a problem.

TEST METHOD

As discussed it was proposed to initially go to site, during peak hour traffic times, and carry out following tests:

1. Measure voltage gradient between earth stakes both perpendicular and parallel to rail lines during peak hour periods.

2. Measure potential of copper water line and/or other underground metal structure, to a copper/copper sulphate reference during peak hour period.

TEST RESULTS

Test Performed	Test Duration	Observed Results
1. Potentials between steel earth stakes, perpendicular to O'Riordan St, from existing entrance to back fence and in approx. area of proposed building and about 100 metres apart.	25 minutes	Maximum fluctuation range of 20 mV. Mostly within 10mV.
2. Potentials between steel earth stakes, parallel to O'Riordan St, along existing back fence and in approx area of proposed building and about 80 metres apart	25 minutes	Maximum fluctuation of 40mV. Mostly within 15mV.
3. Potential of firewater pipeline near back fence to $Cu/CuS0_4$ reference.	20 minutes	-420 to –445 Millivolt range.

DISCUSSION OF RESULTS

The above results do show there are some effects from stray traction currents at the site. That is some potential fluctuations between temporary earth stakes and on fire water pipeline at the site. However all are small and fairly insignificant at 40 millivolts or less maximum fluctuations over the test period.

We rate the present effects as being insignificant on the proposed development. However stray traction current affects at the site could change with time.

RECOMMENDATIONS

Based on our site testing and discussions, we recommend the following options be considered to provide additional protection against any possible stray traction effects. Please note as per our test results, the stray traction effects at this stage are minor and fairly insignificant.

1. The installation of heavy plastic membrane (eg Forticon) under all the reinforced concrete slabs and/or piers to electrically isolate the slabs and/or piers from soil and the stray currents.

2. The installation of the same plastic membrane under any reinforced concrete retaining wall to electrically isolate from the ground.

3. The use of plastic, rather than metallic in-ground pipework where possible.

We trust you find our testing satisfactory. However, should you have any queries, please do not hesitate to contact our office.

Yours faithfully
Corrosion Control Engineering (NSW) Pty Ltd

Mike Ellwood
Senior Engineer