BEAVIS & COCHRANE

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DRAFT REPORT

GKB:LG:6826

31st January 2011

Mirvac Development Group
PO Box 5121
West End Q Brisbane 4101

Att: Mr [redacted]

RE: TENNYSON BUILDING 34 AND 41

Dear [redacted],

At your request our office has been to site with the purpose of identifying why stormwater may have entered the basement area's through the stormwater system before flood waters reached a level at which time they would enter the basement via the ramp and stairs.

Our office was not on site during the flood event and therefore did not witness water infiltration first hand.

GENERAL DESCRIPTION OF SYSTEM

The majority of the building stormwater discharges to a rain water collection tank in the visitors carpark. The 450mm tank overflow runs through the carpark then enters at low level of basement 2 before running 'inground' under the basement slab. External of the basement wall this line connects to a civil manhole, with a solid lid at locations along the length of drain downstream of the raintank are connections to points located within basement 1.

PROBABLE CAUSE FOR STORMWATER ENTERING BASEMENTS PRIOR TO STAIRWELL THRESHHOLD BEING BREACHED

Under what would be considered usual rain events you would not expect water to enter the basement via the stormwater system. We believe the reason for what occurred in the recent flood event was as follows.

There are a number of drain points within the basement, eg basement 1 ramp grate and safetray drains located under basement 1 that are directly connected to the stormwater discharge line. Therefore as the external water level rose once it reached about RL.4.700 (safetray drain) and RL.5.1 ramp drain outlet, water would flow into the basement as these are the lowest open points.

JM 6/10/11

QFCI Date: Exhibit Number: 741

In addition to these points once the system become flooded, that is a water level near or over the external surcharge gully, then the gravity pipe system under that RL would be under a constant static head. The system under this static head by reports developed leaks to fittings with rubber ring joints.

The joints exist to the 450 FRC stormwater bends inside the basement and the expansion joints on the 100mm drain receiving pump discharge and safetray drains. Check valves on the pump lines prevented water flowing back to the mini pump station sumps.

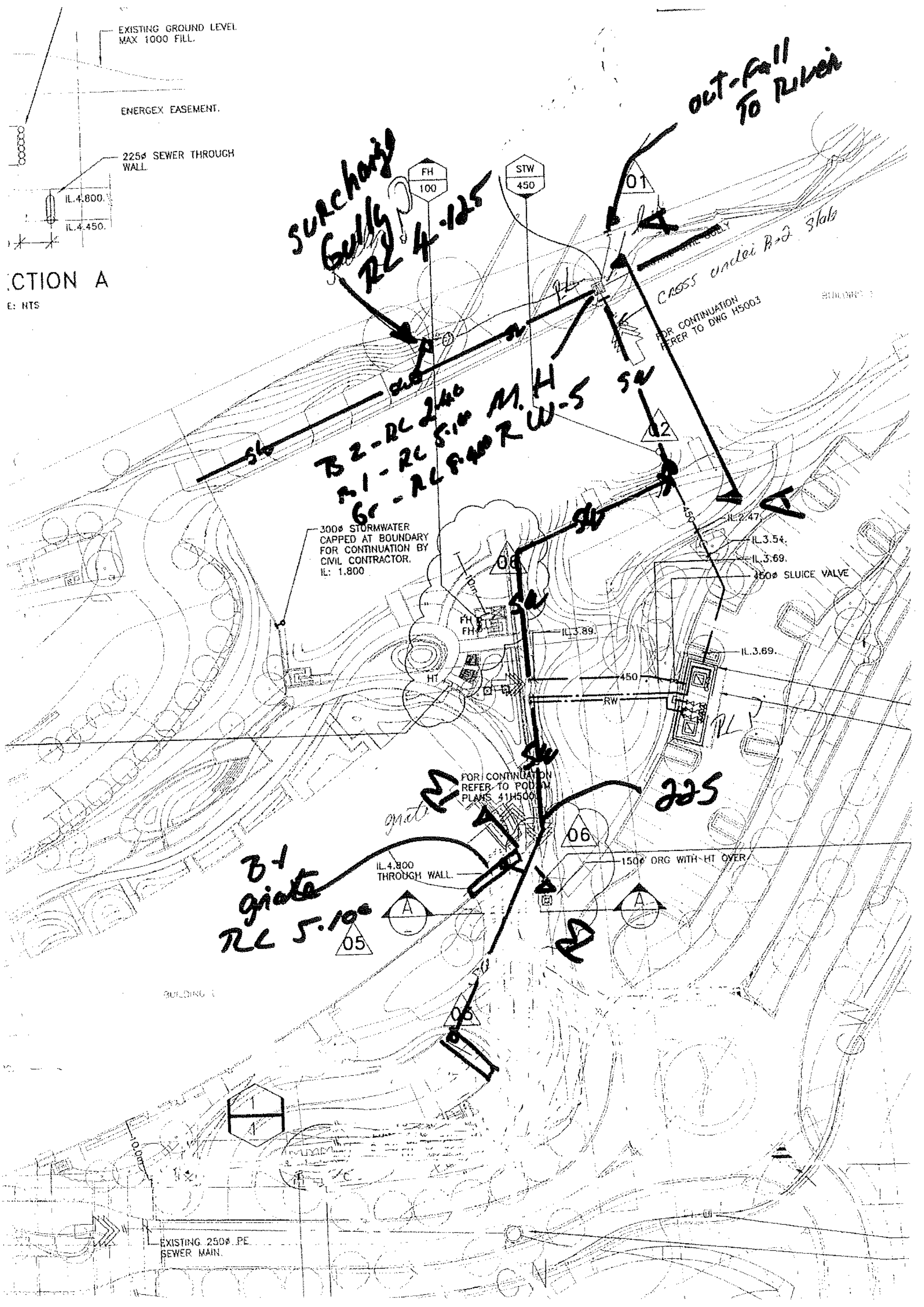
Refer the attached sketches H2 for further information.

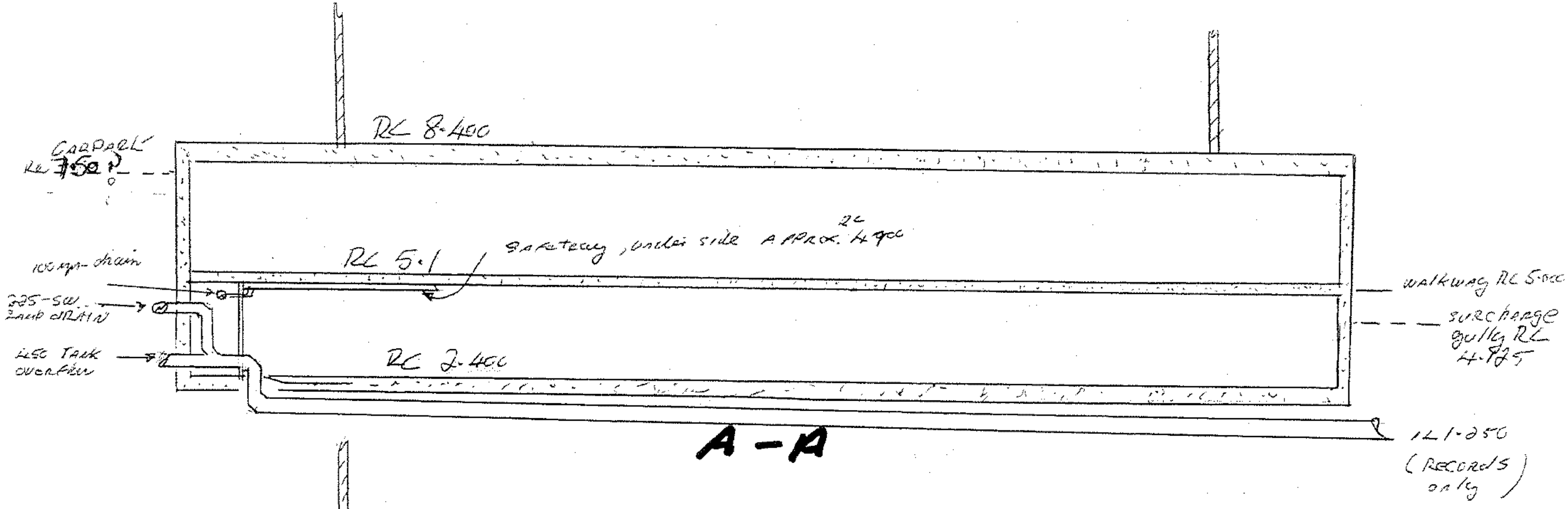
Should you require any further information, please do not hesitate to contact the writer.

Yours faithfully
BEAVIS & COCHRANE

[redacted]

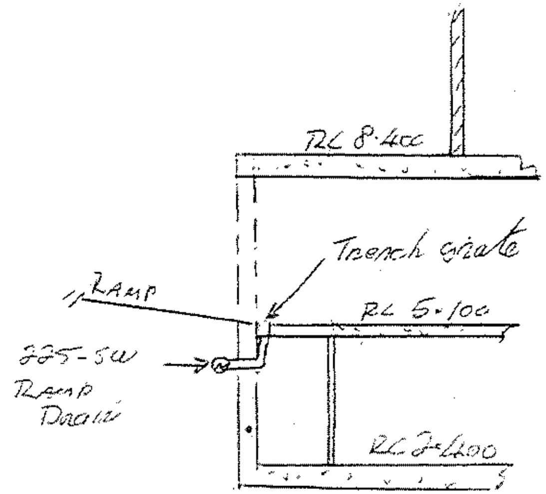
[redacted]


EXISTING GROUND LEVEL
MAX 1000 FILL.
ENERGEX EASEMENT.
225ø SEWER THROUGH WALL.
IL.4.800.
IL.4.450.
CTION A
E: NTS
FH
100
STW
450
surcharge Gully RL 4.125
out-fall To River
01
CROSS under B-2 Slab
FOR CONTINUATION REFER TO DWG H5003
SW
02
B2 - RL 2.40
M.1 - RL 5.10 M.H
Gr - RL 8.40 RW-5
300ø STORMWATER CAPPED AT BOUNDARY FOR CONTINUATION BY CIVIL CONTRACTOR. IL: 1.800
IL.2.47
IL.3.54
IL.3.69
450ø SLUICE VALVE
IL.3.89
IL.3.69
450
RW
FOR CONTINUATION REFER TO POD PLANS 41H500
225
06
150ø ORG WITH HT OVER
IL.4.800 THROUGH WALL.
B-1 grate RL 5.100
05
BUILDING
EXISTING 250ø PE SEWER MAIN.



RL 8.400
CARPARK
RL 7.50 ?
100 mm drain
225-SW RAMP DRAIN
450 TANK OVERFLOW
RL 5.1
safety, underside APPROX. RL 4.900
RL 2.400
walkway RL 5.000
surcharge gully RL 4.425
IL 1.250 (RECORDS only)

A - A



RL 8.400
Trench grate
RAMP
RL 5.100
225-SW
Ramp Drain
RL 2.400

B - B