QP101101

Babtie

Assessment Report – Addendum No. 1

May 2003

Wingmore Bridge

RT No. EVL/2066 KCC No. 883

(Document Reference : Wingmore.add)

[redacted]	DATE	REVISION
	19 May 2003	

Babtie Group Ltd Registered Office:
95 Bothwell Street Glasgow G2 7HX Registered in Scotland No: 141100

Contents **Page**

1. SYNOPSIS

Original Assessment

This bridge was originally inspected and assessed in 1999 by Kent County Council Engineering Consultancy as part of the programme to assess privately owned bridges.

The original assessment was carried out in accordance with BD21/97 and found the internal beams to be capable of carrying the following loading :-

Category	Assessment Live Loading	Category	Assessment Live Loading
Hp	7.5 tonnes	**Hg**	38 tonnes
Mp	7.5 tonnes	**Mg**	38 tonnes
Lp	7.5 tonnes	**Lg**	40 tonnes

The brick jack arches were found to be capable of carrying 40 tonnes Assessment live Load.

The edge beams were found to be capable of carrying 0 tonnes Accidental Wheel Load.

Re-assessment

Those elements that failed to achieve a 40 tonnes assessment rating have been re-assessed to BD21/01.

The section sizes and dimensions confirmed by Brown & Root on 4 May 2000 have been adopted in the re-assessment.

The re-assessment found the internal beams to be capable of carrying the following loading :-

Category	Assessment Live Loading	Category	Assessment Live Loading
Hp	18 tonnes	**Hg**	26 tonnes
Mp	18 tonnes	**Mg**	40 tonnes
Lp	18 tonnes	**Lg**	40 tonnes

The edge beams were found to be capable of carrying 3 tonnes Accidental Wheel Load.

2. INTRODUCTION

Kent County Council Engineering Counsultancy was appointed to undertake the inspection and assessment of Wingmore Bridge. (EVL/2066, KCC No. 883).

The single span structure carries the D1666 over a dismantled railway line at grid reference TR 1872 4658.

The reports produced by Kent County Council Engineering Consultancy are :-

Inspection for Assessment Report	August 1998
Assessment Report	April 1999

Babtie Group, who have acted as Term Consultant to Kent County Council since January 1999, were instructed to re-assess the critical structural elements in accordance with BD21/01, taking on board the findings of site investigation work completed by Brown & Root in 2000.

This report covers the latest re-assessment work and is Addendum No. 1 to the original Assessment Report dated April 1999.

3. RE-ASSESSMENT FINDINGS

3.1 Basis of Re-Assessment

The re-assessment has been undertaken in accordance with the DoT Standards detailed in the original Form AA signed by [redacted] 4 January 1999 and Addendum No. 1 to the Form AA signed By [redacted] on 13 March 2003. (See Appendix A)

3.2 Condition Factor

A condition factor of 1.0 has been assumed for the re-assessment since as-measured section sizes are being used to directly cater for any loss of section.

3.3 Analysis Technique

The girders were analysed by simple distribution methods contained in Chapter 2 of BA16/97, with loading applied in accordance with BD21/01.

3.4 40 tonne Assessment Live Load

The internal girders were found to be capable of carrying 18 tonnes Assessment Live Load for categories Hp, Mp and Lp, 26 tonnes Assessment Live Load for category Hg and 40 tonnes Assessment Live Load for categories Mg and Lg.

The edge beams were found to be capable of carrying 3 tonnes Accidental Wheel Load.

See Section 4.0 Tables 1 and 2 for results.

3.5 HB Assessment

No re-assessment of HB capacity was carried out.

3.6 Parapets

No re-assessment of the parapets was carried out.

3.7 Substructure

No re-assessment of the substructure was carried out.

4. RESULTS TABLES

INTERNAL BEAMS – ASSESSMENT LIVE LOAD		Tensile Stress[1] (N/mm^2)
Dead Load Effect		22.04
Permissible Live Load Stress		14.90
Live Load Effect		19.04
Reduction Factor[2]		0.79
Load Rating	[3] **Hp**	**18 tonnes**
	Mp	**18 tonnes**
	Lp	**18 tonnes**
	Hg	**26 tonnes**
	Mg	**40 tonnes**
	Lg	**40 tonnes**

TABLE 1 : INTERNAL BEAMS – ASSESSMENT LIVE LOAD

EDGE BEAMS – ACCIDENTAL WHEEL LOAD	Tensile Stress[1] (N/mm^2)
Dead Load Effect	33.12
Permissible Live Load Stress	10.03
Live Load Effect (3t AWL)	5.46
Reduction Factor[2]	1.84
Load Rating	**3 tonnes**

TABLE 2 : EDGE BEAMS – ACCIDENTAL WHEEL LOAD

Notes:
(1) Only critical tensile stress re-assessed – compression/shear 40t
(2) Reduction Factor = Live Load Capacity / Live Load Effect
(3) **H**, **M**, **L** (High / Medium / Low HGV Flow)
p, **g** (poor / good surfacing)

5. CONCLUSION

The re-assessment found the internal beams to be capable of carrying the following loading :-

Category	Assessment Live Loading	Category	Assessment Live Loading
Hp	18 tonnes	**Hg**	26 tonnes
Mp	18 tonnes	**Mg**	40 tonnes
Lp	18 tonnes	**Lg**	40 tonnes

The edge beams were found to be capable of carrying 3 tonnes Accidental Wheel Load.

The capacity of all other elements of the structure remain as recorded in the original Assessment Report dated April 1999.

Appendix A

Form AA

Addendum No. 1

RAIL PROPERTY LIMITED

Kent County Council
STRATEGIC PLANNING

ASSESSMENT OF PRIVATELY OWNED STRUCTURES

Approval in Principle - Addendum No. 1
Re-assessment to BD21/01

for

WINGMORE

KCC No. 883

BRB Reference EVL/2066

February 2003

Document Ref: ASM/6626/883.add

Appr [redacted]	Date	Revision
	12 Feb '03	

QP 6626

[redacted]
Strategic Planning Director
Kent County Council
Springfield
Maidstone Kent
ME14 1XQ

Tel: 01622 671411 Fax: 01622 695085

FORM 'AA' (BRIDGES)
ADDENDUM NO.1 – RE-ASSESSMENT TO BD21/01

AMEND CLAUSES IN FORM AA AS FOLLOWS :-

2.0 STRUCTURE DETAILS

2.7 Materials and finishes

Superstructure
The section sizes and dimensions confirmed during the site investigation carried out by Brown and Root on 4 May 2000 will be adopted in this assessment. Since as measured dimensions will be used a condition factor of 1.0 will be adopted.

3.0 ASSESSMENT CRITERIA

3.1 Live Loading, Headroom

3.1.1 HA Loading (assessment)

The structure will be assessed for 40 tonne Assessment Live Load in accordance with BD 21/01

3.1.3 Footway live loading

Footway live load 5KN/m^2 or Accidental Wheel Loads in accordance with BD 21/01

3.2.1 Additional relevant DoT Standards published since the above edition of the TAS including amendments

Delete BD21/97 and replace with :-

BD 21/01 : The Assessment of Highway Bridges and Structures.

5.0 CIVIL ENGINEER'S COMMENTS †

6.0 BRB WORKS GROUP COMMENTS - IF APPLICABLE †

† *To be completed as appropriate by Rail Property Limited*

FORM 'AA' (BRIDGES)
ADDENDUM NO.1 – RE-ASSESSMENT TO BD21/01

AMEND CLAUSES IN FORM AA AS FOLLOWS :-

9.0 THE ABOVE IS SUBMITTED FOR ACCEPTANCE

Signed. [redacted]

Name.: [redacted]

Date..... 12 Feb '03 .....

10.0 THE ABOVE ASSESSMENT, WITH AMENDMENTS SHOWN, IS APPROVED IN PRINCIPLE :

Signed..... [redacted]

Name.: ....

Title : .....

(TAA)

Date..... 13/3/2003 .....

Appendix B

Assessment Calculations

BABTIE **CALCULATION SHEET**

OFFICE MAIDSTONE	PAGE No.	INDEX	CONT'N PAGE No.	
JOB No. & TITLE RPL STRUCTURES - WINGMORE	ORIGINATOR	DM	DATE	Feb 03
SECTION INDEX.	CHECKER	MB	DATE	May 03.

INDEX

BABTIE			CALCULATION SHEET		
OFFICE MAIDSTONE		PAGE No.	01/01	CONT'N PAGE No.	INDEX
JOB No. & TITLE RPL STRUCTURES - WINGMORE		ORIGINATOR	DM	DATE	Feb 03
SECTION THEORY SHEET		CHECKER	MB	DATE	May 03

THEORY SHEET

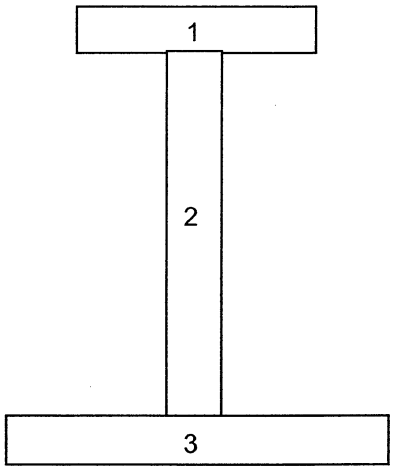
This structure is to be re-assessed to BD21/01. Reference will be made to the previous assessment to BD21/97 (Report dated April 1999). In addition, data recorded by Brown and Root for the BE4 Assessment will be used in the re-assessment and reference will be made to this BE4 Assessment Report dated November 2000. Only those elements of the structure previously found to be incapable of carrying the full 40t Assessment Live Load will be re-assessed. The following revisions have been made to the original BD21/97 assessment :-

1. Revised section dimensions } from Brown & Root Survey
2. Revised effective span
3. Condition Factor $F_c = 1.0$ since as measured sizes used

SECTION PROPERTIES - CAST IRON BEAM

HB.

Wingmore Bridge - Internal Beam



127 x 51

51 x 349

456 x 54

DIMENSIONS AS RECORDED BY BROWN AND ROOT.

Element	Area (mm2)	y(mm)	Area . y (mm3)
1	6477	428.5	2775394.5
2	17799	228.5	4067071.5
3	24624	27	664848
total	**48900**		**7507314**

Therefore, neutral axix = 153.5 mm

Find Ixx :- Ixx = bd3/12 + A.y2

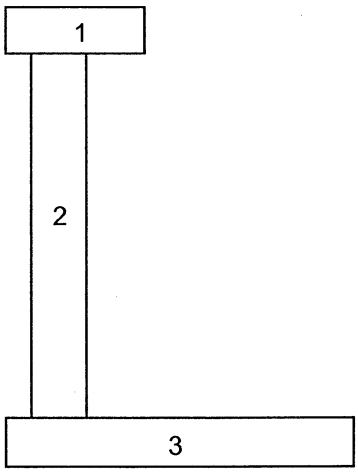
Element	Ixx
1	491142221
2	280717166
3	400171344
total	**1.17E+09**

section modulus:-

tension, Zbt = I/y = **7.63E+06 mm3**

compression, Ztp = I/y = **3.90E+06 mm3**

SECTION PROPERTIES - CAST IRON BEAM
Wingmore Bridge - Edge Beam



127	x	50	
51	x	350	DIMENSIONS AS RECORDED BY BROWN & ROOT.
456	x	52	

Element	Area (mm2	y(mm)	Area . y (mm3)
1	6350	427	2711450
2	17850	227	4051950
3	23712	26	616512
total	**47912**		**7379912**

Therefore, neutral axix = 154.0 mm

Find Ixx :- Ixx = bd3/12 + A.y2

Element	Ixx
1	4.74E+08
2	2.77E+08
3	3.94E+08
total	**1.15E+09**

section modulus:-

tension, Zbt = I/y = **7.44E+06 mm3**

compression, Ztp = I/y = **3.85E+06 mm3**

BABTIE			CALCULATION SHEET		
OFFICE	MAIDSTONE	PAGE No.	03/01	CONT'N PAGE No.	02/02
JOB No. & TITLE	RPL STRUCTURES - WINGMORE	ORIGINATOR	DM	DATE	Feb 03
SECTION	LOADING - INTERNAL BEAM.	CHECKER		DATE	May 03

Dead Loads :-

From original assessment Moment = 171.4 kNm

this was worked out based on an effective length of 7.925m. Therefore, modify this to take account of the confined effective length of 7.85m, from the findings of Brown & Root.

$\therefore$ Moment$_{DL}$ = $\frac{171.4}{(7.925 \times 7.925)} \times (7.85 \times 7.85)$ = 168.2 kNm

dead load stress Z_{bm} = $\frac{168.2 \times 10^6}{7.63 \times 10^6}$ = 22.04 N/mm^2

(only check tensile stress - comp OK in original assessment)

from BD 21/01 cl 4.10 and 4.11.

permissible live load stress f_L = 24.6 - (0.44 . 22.04)

f_L = 14.9 N/mm^2

D/d enhancement factor = $\frac{668 - 75}{454}$ } dimensions from Brown & Root

= 1.31

Live Loads :-

Revise assessment calcs to account for revised eff. length

Moment = $\frac{142.2}{7.925^2} \times 7.85^2 + \frac{51.3}{7.925} \times 7.85$ = 190.3 kNm

tensile stress f_{LL} = $\frac{190.3 \times 10^6}{7.63 \times 10^6 . 1.31}$ = 19.04 N/mm^2.

Dead Loads :-

From original BD21 Assessment Moment = 226.5 kNm

∴ Revised moment (eff span = 7.85m not 7.925m)

$$M = \frac{226.5}{(7.925^2)} \cdot 7.85^2 = 222.2 \text{ kNm}$$

dead load stress = Z_{btm} = $\frac{222.2 \times 10^6}{7.44 \times 10^6}$

= 29.87 N/mm²

from BD 21/01 cl 4.10 and 4.11

permissible live load stress f_L = 24.6 − (0.44 . 29.87)

f_L = 11.46 N/mm²

D/d enhancement factor not applicable to edge beam.

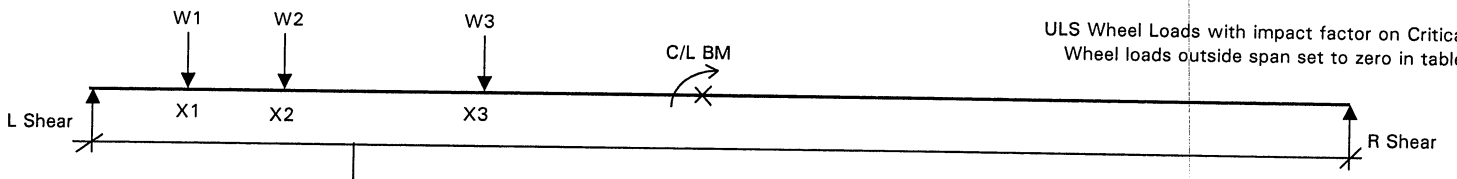
Live Loads :-

See pg 04/02 for details of AWL.

$Z_{btm(3t)}$ = 5.46 N/mm²

$Z_{btm(7.5t)}$ = 14.92 N/mm²

b) Restricted Assessment Table D2 to BD21/01 Appendix D Accidental Vehicles on Non-Cantilevered members supporting central reserves, outer verges and footways not protected from vehicular traffic



ULS Wheel Loads with impact factor on Critical axle. (Kn)
Wheel loads outside span set to zero in tables below.

Convert Tonnes to Kn: 9.81

ULS factors Gf1: 1.00

Gfl: 1.00

Span: 7.850 m. Shear Distance d from support: 0.00 m. Impact Factor: 1.80

Max C/L BM

ULS Forces (Kn.m) — ULS Wheel Loads on Span including impact on Critical Axle (Kn)

Veh ref	Veh Wt	Axles	Crit Ax	Wheel tot	C/L Mom	L Shear	R Shear	W1	W2	W3	W4	W5	W6	X1	X2	X3	X4	X5	X6	A1	A2	A3	A4	A5
RA	20.32	3	2	131.1	208.9	67.6	63.4	21.2	70.6	39.2	0	0	0	1.26	3.93	4.95	4.95	4.95	4.95	2.67	1.02	0	0	0
RB	26.00	3	2	164.8	234.4	89.6	75.2	34.3	83.9	46.6	0	0	0	0.51	3.93	5.23	5.23	5.23	5.23	3.42	1.30	0	0	0
*RC1	26.00	3	2	172.7	256.2	95.2	77.5	34.3	101.5	36.8	0	0	0	0.51	3.93	5.23	5.23	5.23	5.23	3.42	1.30	0	0	0
RC2	26.00	3	2	157.0	212.7	84.1	72.9	34.3	66.2	56.4	0	0	0	0.51	3.93	5.23	5.23	5.23	5.23	3.42	1.30	0	0	0
RD1	26.00	3	2	133.4	214.0	78.9	54.5	31.9	101.5	0.0	0	0	0	0.93	3.93	9.23	9.23	9.23	9.23	3.00	5.30	0	0	0
RD2	26.00	3	2	102.5	153.4	63.4	39.1	31.9	70.6	0.0	0	0	0	0.93	3.93	9.23	9.23	9.23	9.23	3.00	5.30	0	0	0
RE	18.00	2	2	133.4	214.0	78.9	54.5	31.9	101.5	0	0	0	0	0.93	3.93	3.93	3.93	3.93	3.93	3.00	0	0	0	0
RF	7.50	2	1	60.3	111.0	28.3	32.0	53.0	7.4	0	0	0	0	3.93	5.93	5.93	5.93	5.93	5.93	2.00	0	0	0	0
RG	3.00	2	1	23.0	40.6	10.4	12.6	18.5	4.4	0	0	0	0	3.93	5.93	5.93	5.93	5.93	5.93	2.00	0	0	0	0
* critical vehicle			Max C/L BM		256.2	Kn.m		ULS																

max wheel load.

$Z_{btm} = \frac{40.6 \cdot 10^6}{7.44 \cdot 10^6} = 5.46\ N/mm^2\ (3t)$; $\frac{111.0 \cdot 10^6}{7.44 \cdot 10^6} = 14.92\ N/mm^2\ (7.5t)$

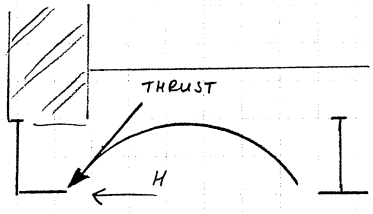
Max Shear

ULS Forces (Kn.m) — ULS Wheel Loads on Span including impact on Critical Axle (Kn)

Veh ref	Gross Wt	Axles	Crit Ax	Wheel tot	C/L Mom	L Shear	R Shear	W1	W2	W3	W4	W5	W6	X1	X2	X3	X4	X5	X6	A1	A2	A3	A4	A5
RA	20.32	3	3	131.1	59.1	15.1	116.0	21.2	39.2	70.6	0	0	0	4.16	6.83	7.85	7.85	7.85	7.85	2.67	1.02	0	0	0
RB	26.00	3	3	164.8	84.0	28.4	136.4	34.3	46.6	83.9	0	0	0	3.13	6.55	7.85	7.85	7.85	7.85	3.42	1.30	0	0	0
RC1	26.00	3	3	157.0	90.4	30.0	127.0	34.3	56.4	66.2	0	0	0	3.13	6.55	7.85	7.85	7.85	7.85	3.42	1.30	0	0	0
*RC2	26.00	3	3	172.7	77.6	26.7	145.9	34.3	36.8	101.5	0	0	0	3.13	6.55	7.85	7.85	7.85	7.85	3.42	1.30	0	0	0
RD1	26.00	3	3	127.0	71.9	38.1	89.0	0.0	56.4	70.6	0	0	0	-0.45	2.55	7.85	7.85	7.85	7.85	3.00	5.30	0	0	0
RD2	26.00	3	3	140.8	50.0	26.5	114.3	0.0	39.2	101.5	0	0	0	-0.45	2.55	7.85	7.85	7.85	7.85	3.00	5.30	0	0	0
RE	18.00	2	2	133.4	47.8	12.2	121.2	31.9	101.5	0	0	0	0	4.85	7.85	7.85	7.85	7.85	7.85	3.00	0	0	0	0
*RF	7.50	2	1	60.3	7.4	58.5	1.9	53.0	7.4	0	0	0	0	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0	0	0	0
RG	3.00	2	1	23.0	4.4	21.8	1.1	18.5	4.4	0	0	0	0	0.00	2.00	2.00	2.00	2.00	2.00	2.00	0	0	0	0
			Max Shears		Kn	58.5	145.9	ULS	at d from support															

04/02

Check adequacy of tie rods.



DL contributing to thrust = fill + jack arch [SW + parapet do not affect min axis bending]

(from original calcs - pg 6·5) = 7·88 + 4·80

= 12·68 kN/m

assume tie rods @ 2·4m c/c, 19 ϕ (measured by Brown & Root)

Assume a parabolic line of achain tan A = 1·238 (BE4 assess)

∴ horizontal component of thrust, $H = \frac{12·68}{1·238} = 10·24$ kN/m

tie rods @ 2·4m c/c so force in tie rod = 10·24 × 2·4

= 25 kN.

LL Contributing to thrust = 18·5 kN (3t veh - pg 04/02).

∴ horizontal component = $\frac{18·5}{1·238} = 14·9$ kN

assume load distributed to 2 ties ∴ load/tie = 7·5 kN

total load/tie. = 25 + 7·5 = 32·5 kN

Area of tie = $\pi \times \left(\frac{19}{2}\right)^2$ = 284 mm²

∴ stress in tie = $\frac{32·5 \times 10^3}{284}$ = 114 N/mm²

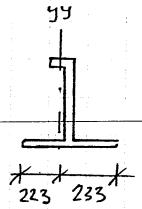
< 220 N/mm² (WI).

∴ TIE RODS OK FOR 3t AWL

Check Biaxial Bending

Find Iyy

	Area (mm^2)	x	Ax (mm^3)
①	6350	228+41 = 269	1.708×10^6
②	17850	228	4.070×10^6
③	23712	228	5.406×10^6
	Σ 47912		Σ 11.184×10^6



$\therefore$ neutral axis $= \frac{11.184 \times 10^6}{47912}$

$= 233\ mm$

$$I = \frac{50 \times 127^3}{12} + (6350 \cdot 36^2) + \frac{350 \times 57^3}{12} + (17850 \cdot 5^2) + \frac{52 \times 456^3}{12} + (23712 \cdot 5^2)$$

$I = 432.6 \times 10^6\ mm^4$

$\therefore$ Critical $Z_{y\,tens} = \frac{432.6 \times 10^6}{223} = 1.940 \times 10^6\ mm^3$

From page 04/3 thrust = 10.24 kN/m

assuming 2.4m span and continuous support from ties

max moment = $10.24 \times 2.4^2 \times 0.107$ (Steel Designers Manual)

= 6.31 kNm

$\therefore$ DL stress = $\frac{6.31 \times 10^6}{1.94 \times 10^6} = 3.25\ N/mm^2$

$\therefore$ DL stress = 29.87 + 3.25 = 33.12 N/mm^2

$\Rightarrow$ perm. stress = 24.6 (- 0.44 x 33.12) = 10.03 N/mm^2

LL stress (3t) = 5.46 N/mm^2 < 10.03 N/mm^2

$\therefore$ 3t AWL Rating OK

BABTIE **CALCULATION SHEET**

OFFICE	MAIDSTONE	PAGE No.	05/01	CONT'N PAGE No.	04/02
JOB No. & TITLE	RPL STRUCTURES - WINGMORE	ORIGINATOR	DM	DATE	Feb 03
SECTION	SUMMARY.	CHECKER	MB	DATE	May 03.

INTERNAL BEAM

	Tensile Stress (N/mm^2)
Section Capacity	-
Dead Load.	22.04.
Permissible Live Load	14.9
Live Load stress	19.04
Reduction factor	0.79
Rating. (BD21/01).	18t - Hp 18t - Mp 18t - Lp 26t - Hg 40t - Mg 40t - Lg

EDGE BEAM
(Biaxial Bending)

Dead Load	33.12
Permissible Live Load	10.03
Live Load stress (3t)	5.46 < 10.03 ∴ 3t rating.
(7.5t)	14.92 > 10.03 ∴ Fails 7.5t.
Rating	3t

FORM BA – ADDENDUM No. 1
CERTIFICATE OF ASSESSMENT AND CHECKING

TECHNICAL APPROVAL PROCEDURES
FOR
ASSESSMENT OF BRIDGES AND OTHER STRUCTURES

1 Identification of Structure **Category of Check: I**

Name	:	Wingmore Bridge
Location & Grid Ref.	:	North of Elham, Kent TR 1872 4658
RPL No.	:	EVL/2066 KCC No. 883

2 Certification of re-assessment :

2.1 Name of Organisation carrying out re-assessment : Babtie Group

2.2 I certify that reasonable professional skill and care have been used in the re-assessment of the above structure, with a view to securing that the re-assessment;

(i) is in accordance with the Approval in Principle as recorded in the original Form AA signed by John Clarke on 4 January 1999 1998 and Addendum No. 1 to the Form AA signed By John Clarke on 13 March 2003, including associated comments:

None

(ii) complies with the criteria, standards, codes of practice and methods stated on the above Form AA (including any stated departures), with the following amendments and/or additions :-

None

2.3 The unique numbers of drawings used for the re-assessment are :-

6626/883/01 General Arrangement

FORM BA – ADDENDUM No. 1
CERTIFICATE OF ASSESSMENT AND CHECKING

2.4 The capacity of the structure re-assessed in accordance with the above is as follows:

(i) Superstructure :

Internal beams:-

Category	Assessment Live Loading	Category	Assessment Live Loading
Hp	**18 tonnes**	Hg	**26 tonnes**
Mp	**18 tonnes**	Mg	**40 tonnes**
Lp	**18 tonnes**	Lg	**40 tonnes**

Edge beams :- **3 tonnes Accidental Wheel Load**

(ii) Substructure (qualitatively) :

No re-assessment of the substructure was carried out.

Name :	[redacted]	Title/Professional Qualification:	ENGINEER
Signed:		Date:	16 May 2003.
To be signed by the person or team leader carrying out the re-assessment.			

2.5 I certify that the staff who have carried out the above re-assessment are suitably competent and that (so far as I can reasonably ascertain) they have used reasonable professional skill and care.

Name	[redacted]	Title/Professional Qualification:	Director
Signed		Date:	19 May 2003
To be signed by a Director (or equivalent) in the organisation responsible for staff carrying out the re-assessment.			

FORM BA– ADDENDUM No. 1
CERTIFICATE OF ASSESSMENT AND CHECKING

3 Certification of checking of re-assessment :

3.1 Name of Organisation carrying out check : Babtie Group

3.2 I certify that reasonable professional skill and care have been used in the independent checking of the above structure, with a view to securing that the criteria given in Section 2 above has been met.

Name : [redacted]	Title/Professional Qualification: ENGINEER
Signed: [redacted]	Date: 19/05/03
To be signed by the person or team leader carrying out the check.	

3.3 I certify that the staff who have carried out the above check are suitably competent and that (so far as I can reasonably ascertain) they have used reasonable professional skill and care.

Name : [redacted]	Title/Professional Qualification: Director
Signed: [redacted]	Date: 19 May 2003
To be signed by a Director (or equivalent) in the organisation responsible for staff carrying out the check.	

4. Acceptance by the Technical Approval Authority

I accept this certificate as a record that the assessment and checking of the structure identified above have been carried out in accordance with Section 2.2.

Name [redacted]	Title/Professional Qualification: Senior Civil Engineer
Signe [redacted]	Date: 21 May 2003
To be signed by the Rail Property Board Engineer	