CARDINAL FREEMAN VILLAGE, ASHFIELD

REPORT REGARDING REMOVAL & REINSTATEMENT OF SANDSTONE GATE PIERS AND WROUGHT IRON GATES

Prepared by

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PTY LTD

HERITAGE MASONRY CONSULTANT

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1.0 Purpose of Report

This report was commissioned by EPM Projects Pty Ltd on behalf of Stockland Development Pty Ltd.

The purpose of this report is define a suitable methodology for:

i) The careful dismantling of three sandstone gate piers and gates at the Victoria St vehicular entrance for later re-use;
ii) The adequate protection of the remaining sandstone railing base and wrought iron railings;
iii) The appropriate storage of the sandstone gate piers and gates until required for re-instatement
iv) The reinstatement of the gate piers and gates in their new location.

2.0 Author Identification

Jasper Swann has 24 years experience in the construction, conservation and care of sandstone buildings and structures. He is an appointed member of the NSW Heritage Council's Technical Advisory Group and a member of Australia ICOMOS. He holds a BSc(Hons) Degree, a City & Guilds London Institute Craft Certificate in Stonemasonry, a Diploma in Lettercutting & Carving and a Masters Degree in Heritage Conservation. He is a qualified heritage consultant listed on the NSW Department of Planning Heritage Branch's Directory of Heritage Consultants, and a guest lecturer in the conservation and care of sandstone structures in the Masters of Heritage Conservation Program at the University of Sydney's Faculty of Architecture, Design and Planning. He is a regular article contributor to the industry magazine, *Discovering Stone*, and a regular speaker at Australian Stone Advisory Association seminars.

3.0 Inspection of the Site

The gate piers at the site were inspected by Jasper Swann on 30 July 2013, in the company of Ryan Mooney of EPM Projects. Conditions at the time of inspection were fine.

4.0 Identification of the Piers

The piers are identified as Piers 2, 3 & 4, as shown on the extract of the site plan provided by EPM Projects, (Figure 1).

Each pier consists of four courses: the base, shaft, cap and finial, (Figure 2).

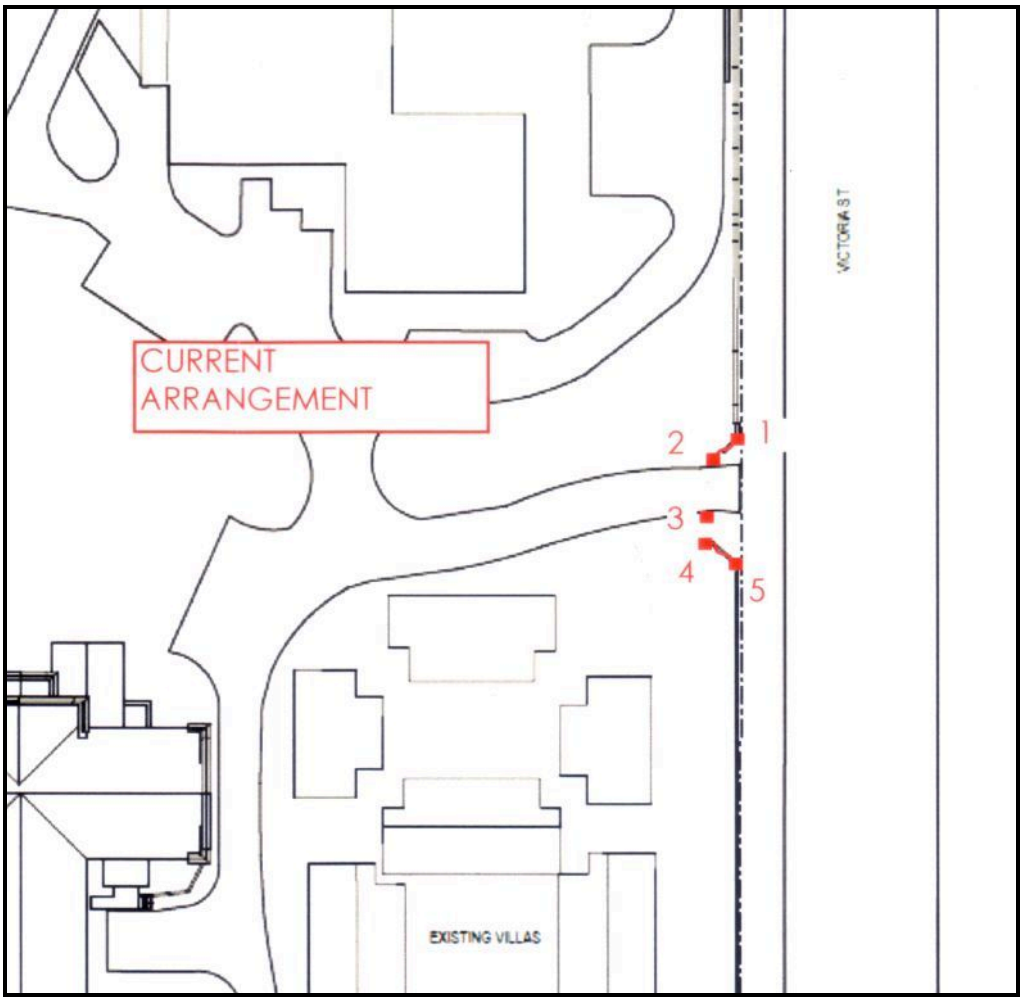


Figure 1 **Extract of Site Plan showing current arrangement of Gate Piers 1-5, in red. (Source: EPM Projects)**

Figure 2 **Identification of the elements of each stone gate pier. (Photo: Jasper Swann, 2013)**

Table 1 shows the approximate dimensions and mass of each component of the piers.

Element	Length, mm	Breadth, mm	Height, mm	Mass, Kg (Approx)
Base	760	760	900 (minimum)	1190 Kg (min)
Shaft	610	610	1590	1300 Kg
Cap	790	790	700	800 Kg
Finial	200	200	380	28 Kg

Table 1 Approximate dimensions and mass of each component of sandstone piers.

5.0 Methodology for Dismantling Gate Piers and Wrought Iron Gates

The following methodology, in the sequence provided, is recommended:

5.1 Removal of Gates

- Prepare to take the weight of the wrought iron gate leaf to Pier 2 using soft slings slung from a truck-mounted hiab-crane.
- Gently loosen and free cleats at the hasp/hinge restraining the gate leaf by gently tapping with a hammer until free, (Figure 3). Carefully chip away paint if necessary and, if necessary, apply WD40 to assist in freeing the cleats. Protect sandstone from any overspray of WD40. Place the cleats and U-shaped hasp in a secure bag, labeled and securely tagged for placement in storage.
- Lift gate leaf and slew onto the bed of the truck, laid gently down in a horizontal position on 4”x4” hardwood timber skids.
- Repeat for gate leaf to Pier 3.
- Carefully remove iron ferrules from the sandstone threshold, (Figure 4), and place in secure bag with the U-shaped sleeves and cleats.
- Transport gates to storage facility, (see 7.0).

Figure 3 **Cleat and hasp at gate hinge. (Photo: Jasper Swann, 2013)**

Figure 4 **Iron ferrule at pivot of gate. Remove and retain in storage for future use. (Photo: Jasper Swann, 2013)**

5.2 Dismantling of Pier Caps and Finials

- Cut upper fence rail approximately 150mm from the entry point into the shaft of Pier 2. Leave the residual embedded in the pier. Repeat for Pier 3.

- Unless loose, it is recommended that finials not be detached from the caps. It is assumed that the finials are fixed in their bed joint to the caps with non-ferrous dowel. If secure, they should remain attached during the dismantling. If finials are not secure, carefully free from dowel by opening-up bed joint and by gently rotating the finial until loose. Set aside, and protect using softening (e.g. old carpet, rubber matting), prior to storing.

- To free cap from its bed, carefully insert a small pinch bar into the bed joint, preferably in a location where the bottom arris is already weathered/damaged, and insert a thin timber wedge. Insert small piece of softening into the bed joint. Re-insert pinch bar to greater depth, under the softening, and repeat process until a 2" x 1" softwood timber batten can be inserted under the cap. Repeat on opposite side of cap and insert a second timber batten.

- Protect the bottom arrises of the cap using softening. Lift the cap using soft webbing slings of adequate rating slung from a mobile- or hiab-crane. Ensure softening remains between the slings and the stone arris at all times during lifting.

Note: the Cap to Pier 2 is badly fractured in its lower section. Ensure all loose stone is removed and that the slings have good purchase prior to lifting.

5.3 Dismantling of Shafts

- Wrap waist of shaft (below the embedded iron hasp and rail) with old carpet, minimum 500mm width, secured with duct tape.

- Secure 2 x 100mm wide flat soft slings tightly around the waist of the shaft, secured on opposite sides of the shaft, each in a simple choke. Protect the top bed arris from the slings with softening. Gently lift the shaft using a mobile- or hiab-crane. Take the weight slowly in order to avoid sudden upward surge when the mortar bed gives way. NOTE: the weight should be taken by the friction of the slings against the waist of the shaft. The embedded iron hasp and residual iron rail in Piers 2 & 4 ought not to take the weight of the shaft, but act merely as a restraint to prevent the upward movement of the slings. On Pier 3, there is no hasp, so it is imperative that the slings are tightly secured to prevent upward movement during the lift.

- Land the shaft temporarily in the vertical position on a folded rubber mat laid over a layer of old carpet on a timber pallet. Loosen the slings and relocate them to the upper part of the shaft. Gently lower the shaft into the horizontal position, allowing the folded rubber mat to 'slip' on itself in a controlled manner as the shaft rotates, and finally placing 2"x2" timber battens under the shaft in order to allow release and removal of the slings.

- Protect the shaft from damage by immediately wrapping in carpet or rubber matting secured with duct tape.

- Repeat for each shaft.

NOTE: Pier 2 has an indent in the lower section of the shaft, (Figure 5). Care needs to be taken that this is not displaced during the dismantling, or if loose, that it is carefully removed, identified and set aside for storage.

Figure 5 **Existing indent in Pier 2. Care required when dismantling. (Photo: Jasper Swann, 2013)**

5.4 Dismantling of Bases

- Excavate all concrete and bitumen around each base until the bed of the base is reached. The depth of the bases is unknown, but may be between 900 – 1500mm.

- It is assumed that there will be a square-cut Lewis hole in the centre of the base. Re-use of this hole is not recommended. Accordingly, drill 2 No. 25mm diameter x 150mm deep holes in the top bed of the base, diametrically opposed and each located 250mm from the external corner of the base. Insert a 1-Tonne rated split-pin Lewis pin, (Fig.6) into each hole. Loop a soft sling rated to a minimum 2-Tonnes through the rings of the Lewis pins. (See Figure 7, sketch SK-01 and Figure 7). Gently lift using crane until sufficient clearance is obtained under the base to allow insertion of 4”x4” timber skids under the base.

- Temporarily rest the base on the timber skids. Release the slings from the Lewis pins, and remove them. Lift the base using 2 x webbing slings in a basket hitch, each placed a minimum 100mm from the edge of the base, and place on a timber pallet.

- Protect the base from damage by immediately wrapping in carpet or rubber matting secured with duct tape.

- Repeat for each base.

Figure 6 Split-pin Lewis Pins.

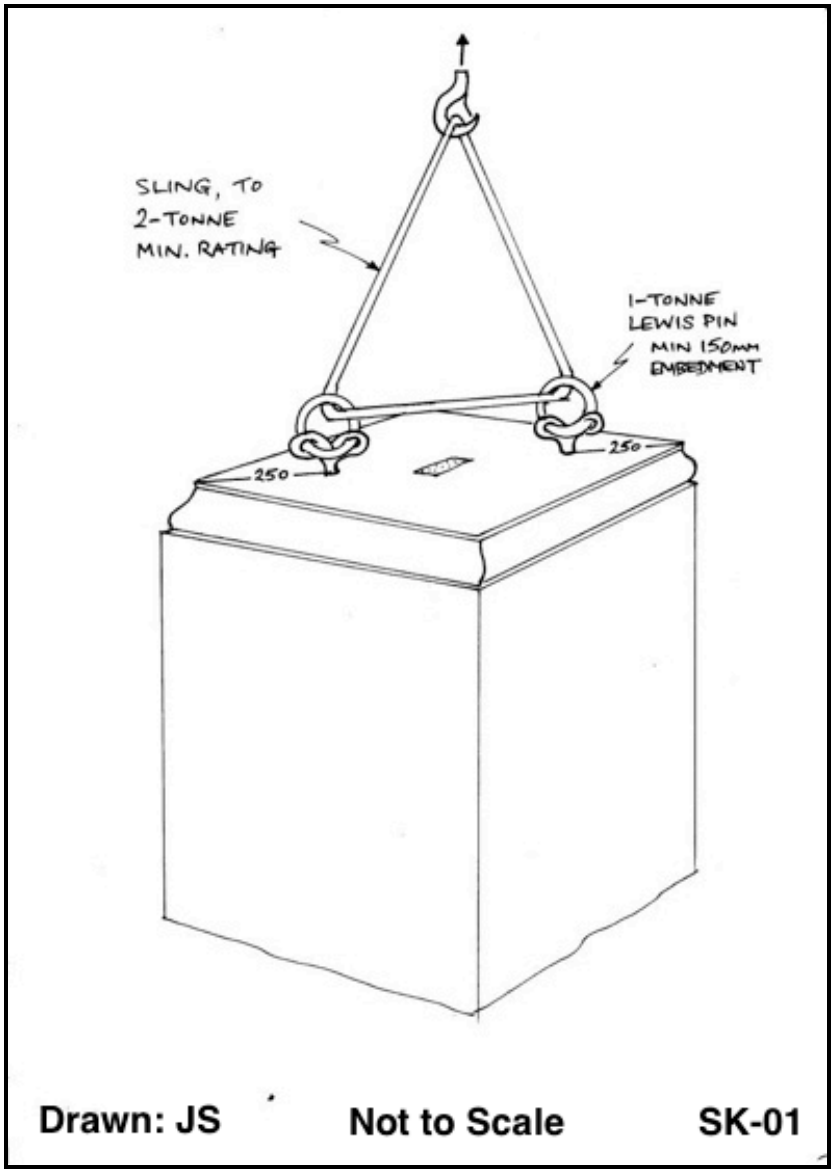


Figure 7 **Proposed initial lifting methodology for pier bases. NOTE: It is imperative to transfer load from Lewis pins to webbing slings once raised 150mm above ground level.**

5.5 Removal of Existing Steel Bollards

The existing steel bollards adjacent to Piers 2 & 3, (Figure 8), shall be removed by excavating around them until free. The bollards are to be set aside for re-use in the temporary protection of the exposed ends of the railing base during construction, (see 6.0).

Figure 8 **Existing steel bollards (2 Off) to be removed and temporarily re-instated to protect exposed ends of railing base during construction.**
(Photo: Jasper Swann, 2013)

6.0 Protection of the Remaining Sandstone Railing Base and Railings

Protect the ends of the railing bases with 16mm plywood casing, approx. 300 x 300 x 600mm, wired together at the top through the railings, as shown in Figure 9, sketch SK-02. Secure in place with a star picket either side of the ply protection to prevent lateral displacement of the ply.

Protect the ends of the cut upper fence rail using carpet and duct tape.

Temporarily Install salvaged steel bollards approximately 200mm from the reveal face of the ply protection. Bollards to be set in concrete to replicate existing height above ground level.

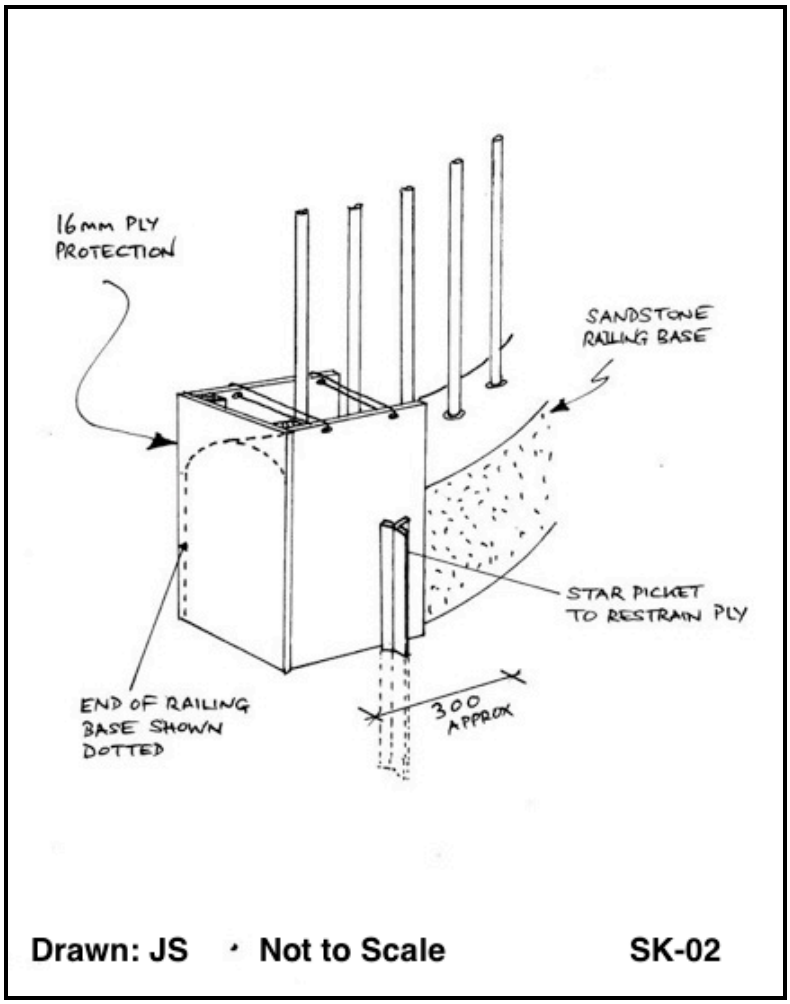


Figure 9 **Detail for protection of ends of sandstone railing base.**

7.0 Storage of Sandstone Gate Piers and Gates

It is understood that there will be space on site for the temporary placement of shipping containers. Each sandstone element should be stored on a single pallet. There will be a total of 9 pallets, requiring two containers. It is recommended that the sandstone elements of the gate piers and the wrought iron gates be stored in two containers of dimension to suit. The gates should be stored in the upright position on hardwood timbers.

The pallets of stone can be placed in the containers using a forklift or pallet truck. No vertical stacking of the sandstone elements is recommended, as this may cause damage to the stone.

Should an alternative storage solution be required, the sandstone and wrought iron elements may be stored outside in a location away from pedestrian and vehicular activity. I recommend that they be stored on timber pallets on firm ground and protected from damage with softening as previously described. The gates should be stored in the upright position on hardwood timbers.

8.0 Methodology for Reinstatement of Gate Piers and Gates in New Location

The handling and construction methodology for reconstructing the piers in their new location is identical to the process for dismantling, but in reverse.

8.1 Repairs to Cap to Pier 2

It is recommended that an indent to the lower section of the cap to Pier 2 be installed by a banker mason prior to reinstatement, fixed to the parent stone using 4 x M10 316-Grade stainless steel dowels. The indent shall have a hairline horizontal joint under the bottom fillet, (Figure 10), not a pointed joint.

Figure 10 **Install hairline indent to cap as shown in red prior to reinstatement. (Photo: Jasper Swann, 2013)**

8.2 The new piers shall be installed on reinforced concrete footings to details provided by the structural engineer.

8.3 Bedding Mortar

Each element of the piers shall be bedded on a soft lime mortar of 1: 3 (slaked lime: clean sharp sand). Bed joints shall be thoroughly dampened prior to applying the bedding mortar. No packers of any kind shall be installed in the bed joints.

Bed joints shall be raked out to a depth of minimum 25mm immediately upon completion of fixing and any mortar cleaned from the face of the stonework using clean water.

8.4 Mortar Repairs

Miscellaneous spalls and localized areas of existing damage to sandstone elements should be repaired following reinstatement of the piers using colour- and texture-matched NHL-based (Natural Hydraulic Lime) mortar repairs. Repairs of depth in excess of 30mm shall be reinforced with a stainless steel armature secured to the parent stone.

8.5 Pointing Up

On completion of all repairs, the joints shall be pointed up using a 1:2:9 mortar (off-white cement: slaked lime: clean sharp sand), and brush-finished flush with the face of the stonework. Masking tape may be applied either side of the joints in order to prevent smearing of mortar on the stonework. No masking tape is to remain on the sandstone for more than 4 hours.

8.6 Reinstatement of Railings and Gates

On completion of erection of piers, join the upper rail of the railings to the residual stub of the upper rail retained in the shafts of Piers 2 & 4 with a site-weld. Grind back to a clean joint, prime and paint in colour as directed by the Superintendent.

Install ferrules in threshold in correct location for housing existing gate pivots. Reinstate existing wrought iron gates.

NOTE: Consideration should be given to the reinstatement of the existing steel bollards as a protective measure against vehicular impact with the piers.

9.0 Demolition and Reinstatement of approximately 1.5 lin m of Existing Railing Base at Proposed New Location for Piers

Prior to relocation of existing piers, the existing sandstone railing base shall be cut to the north of the existing brick wall at the location of the new driveway entrance. A clean vertical cut shall be made in the wall using a 14” diamond wet saw to within 10mm of the required vertical cut. The new end of the in-situ railing base shall then be worked back by hand to the correct line, and shall be plumb and square.

Set aside the removed section of railing base for re-use at the original vehicular entrance from where the gate piers have been salvaged. Protect all arrises from possible damage using softening.

Dress the ends of the salvaged section of railing base by hand to a true plumb and square face. The location of the vertical plane to be dressed back shall be determined in consideration of the location of the existing fence picket holes as they relate to the existing fence picket holes in the location in which the stone is to be reinstated. The existing picket holes should be re-used in preference to drilling new holes.

The salvaged section of railing base shall be bedded in its new location on a reinforced concrete footing to details provided by the structural engineer, using a bedding mortar as described in 8.2 above, and shall be pointed-up using mortar as described in 8.3.

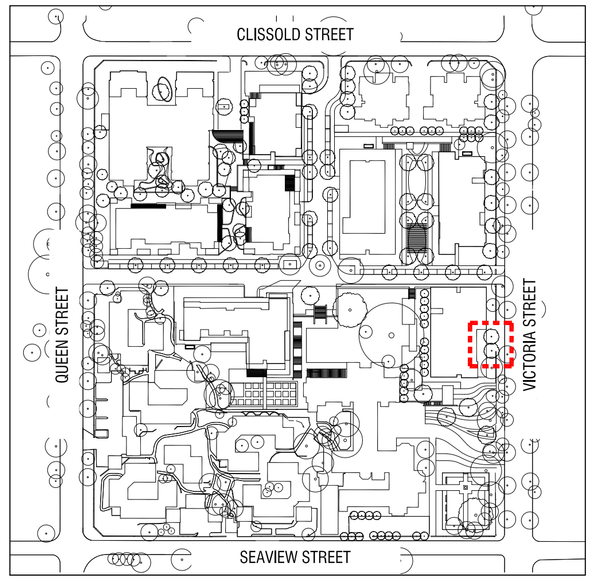
Jasper Swann Pty Ltd **23/08/13**

CARDINAL FREEMAN VILLAGE

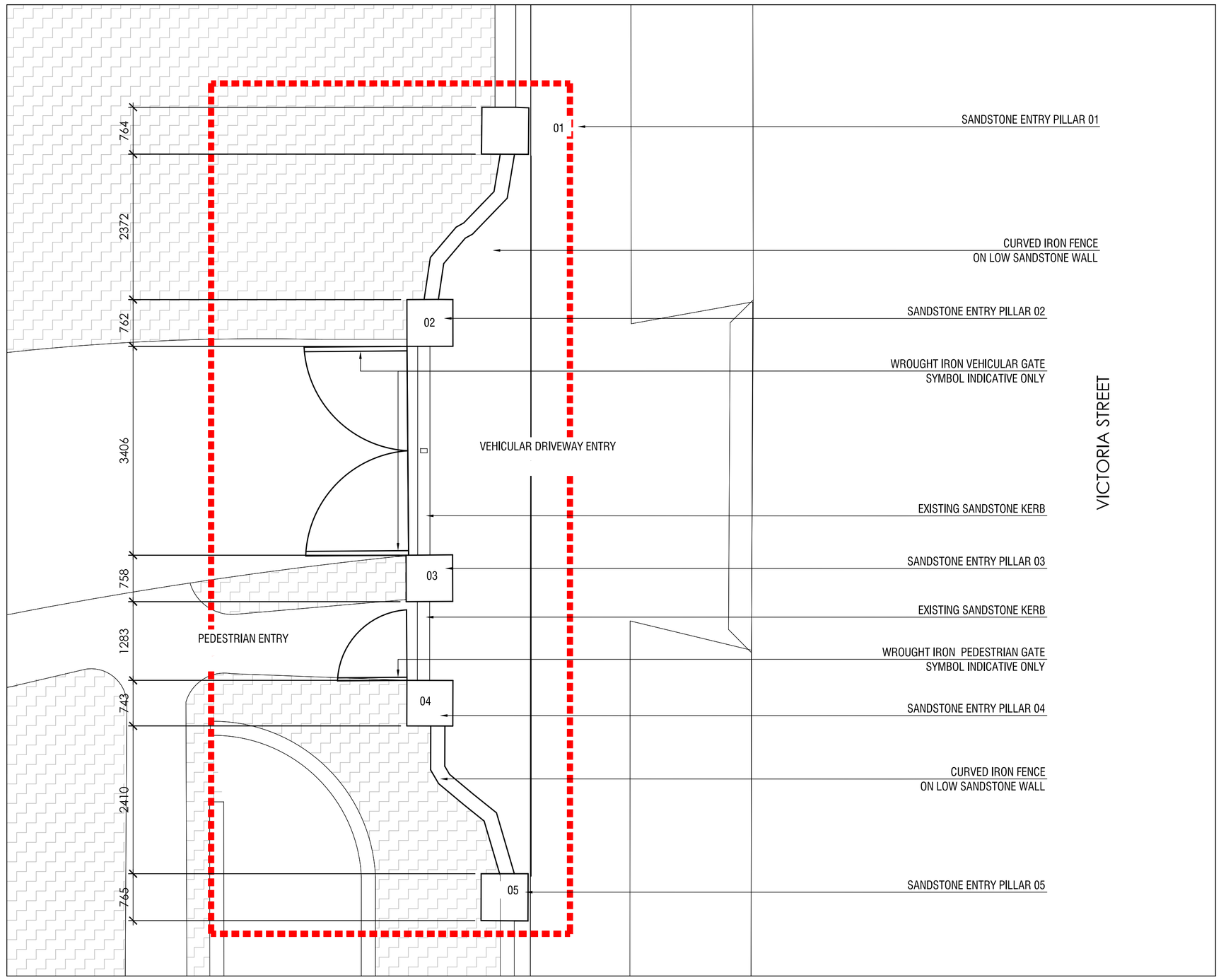
ASHFIELD NSW

HERITAGE GATE RELOCATION

01 EXISTING GATE PHOTOGRAPH



02 EXISTING GATE LOCATION PLAN
NTS



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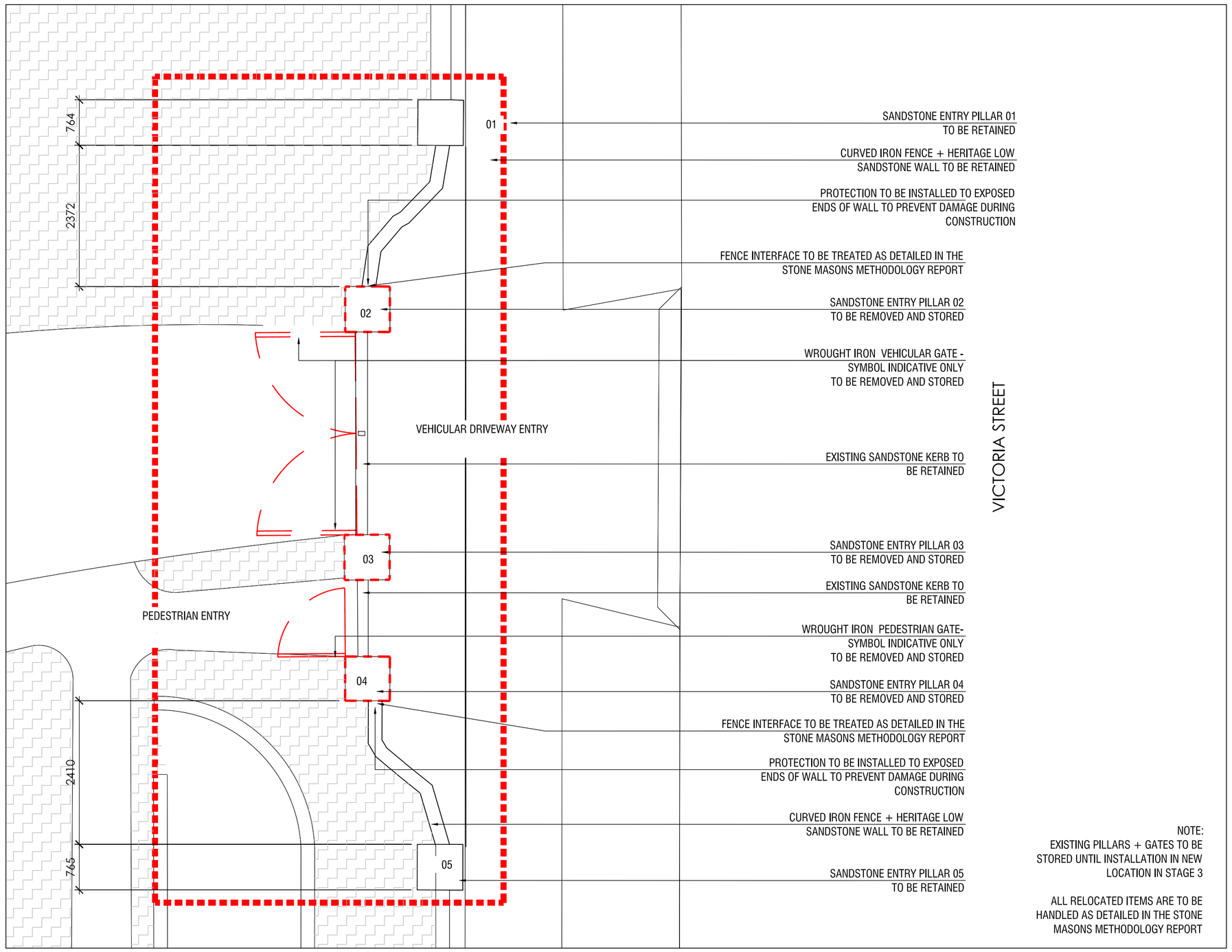


NOTE:
EXISTING PILLARS + GATES TO BE
STORED UNTIL INSTALLATION IN NEW
LOCATION IN STAGE 3

ALL RELOCATED ITEMS ARE TO BE
HANDLED AS DETAILED IN THE STONE
MASONS METHODOLOGY REPORT

04 EXISTING GATE LOCATION PROPOSED INTERIM ARRANGEMENT
scale 1:100

1:50
0.5 0M 0.5 1 2.5M

O C U L U S
level 1, 5 wilson street / post box 307 **newtown** nsw 2042
p 02.9557.5533 f 02.9519.8323 sydney@oculus.com.au
LANDSCAPE ARCHITECT

DATE	DESCRIPTION	REV	DATE	DESCRIPTION	REV
31/07/13	ISSUE FOR REVIEW	A	-	-	-
02/08/13	ISSUE FOR REVIEW	B	-	-	-
08/08/13	FOR TENDER	C	-	-	-
16/08/13	FOR TENDER	D	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

REVISIONS

CLIENT: STOCKLAND

ARCHITECT: AJ+C
ALLEN JACK + COTTIER

PROJECT: Cardinal Freeman Village

DRAWING TITLE: HERITAGE GATE RELOCATION PLAN 1/3

DRAWING PURPOSE: TENDER
DOCUMENTATION

DRAWING INFORMATION

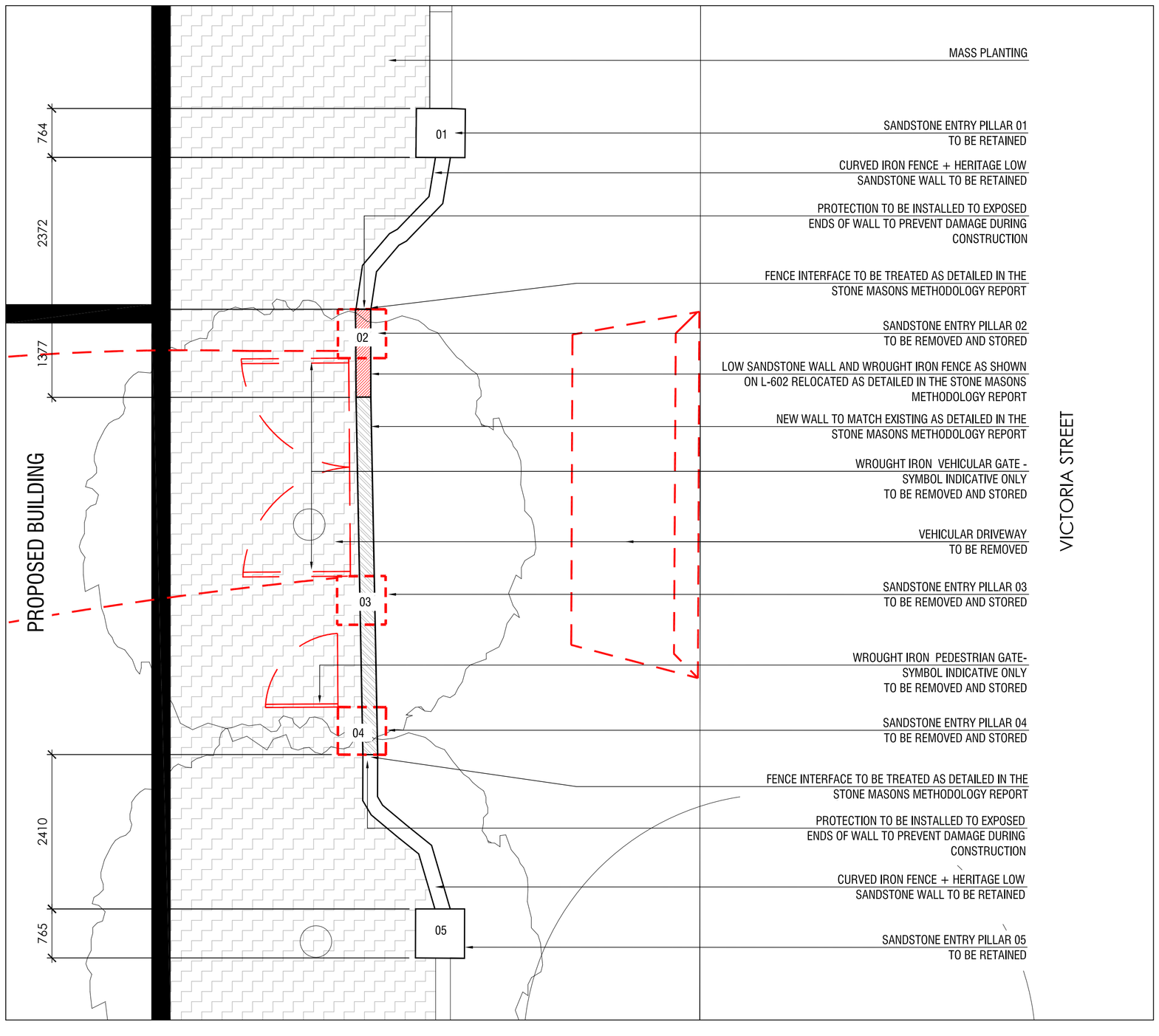
SCALE	AS SHOWN @ A1	DRAWN BY	RK
JOB NO.	S12-030	CHECKED BY	KS
		APPROVED BY	RJ

NORTH

DRAWING NO.: L-600

REV.: D

A1



01 EXISTING GATE LOCATION PROPOSED FINAL ARRANGEMENT (STAGE 3)
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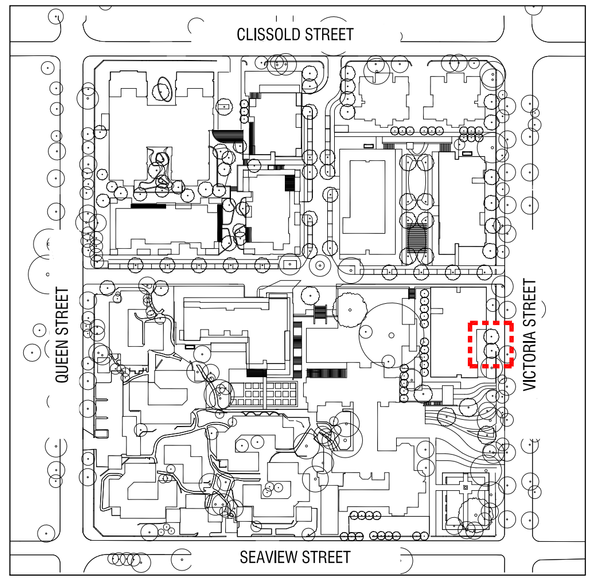

02 EXISTING GATE LOCATION PLAN
NTS

NOTE:
EXISTING PILLARS + GATES TO BE STORED UNTIL INSTALLATION IN NEW LOCATION IN STAGE 3

ALL RELOCATED ITEMS ARE TO BE HANDLED AS DETAILED IN THE STONE MASONS METHODOLOGY REPORT

O C U L U S
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DATE	DESCRIPTION	REV	DATE	DESCRIPTION	REV
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02/08/13	ISSUE FOR REVIEW	B	-	-	-
08/08/13	FOR TENDER	C	-	-	-
16/08/13	FOR TENDER	D	-	-	-
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LANDSCAPE ARCHITECT | REVISIONS

CLIENT: STOCKLAND

ARCHITECT: AJ+C
ALLEN JACK + COTTIER

PROJECT: Cardinal Freeman Village

DRAWING TITLE: HERITAGE GATE RELOCATION PLAN 2/3

DRAWING PURPOSE: TENDER
DOCUMENTATION

DRAWING INFORMATION

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		APPROVED BY	RJ

NORTH

DRAWING NO.: L-601

REV.: D

A1

EXISTING BUILDINGS

EXISTING BUILDINGS

EXISTING BUILDINGS

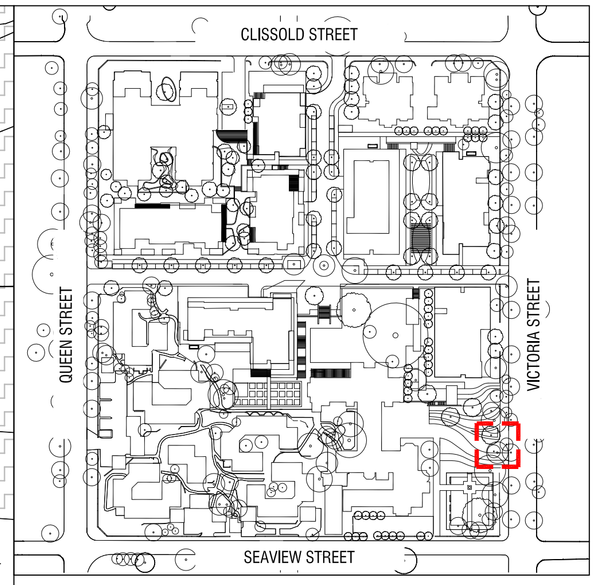
EXISTING BUILDINGS

EXISTING BUILDINGS

GLENTWORTH HOUSE

PROPOSED VEHICULAR DRIVEWAY ENTRY (TO BE CONSTRUCTED IN STAGE 3)

PROPOSED PEDESTRIAN ENTRY (TO BE CONSTRUCTED IN STAGE 3)



02 EXISTING GATE RELOCATION KEY PLAN
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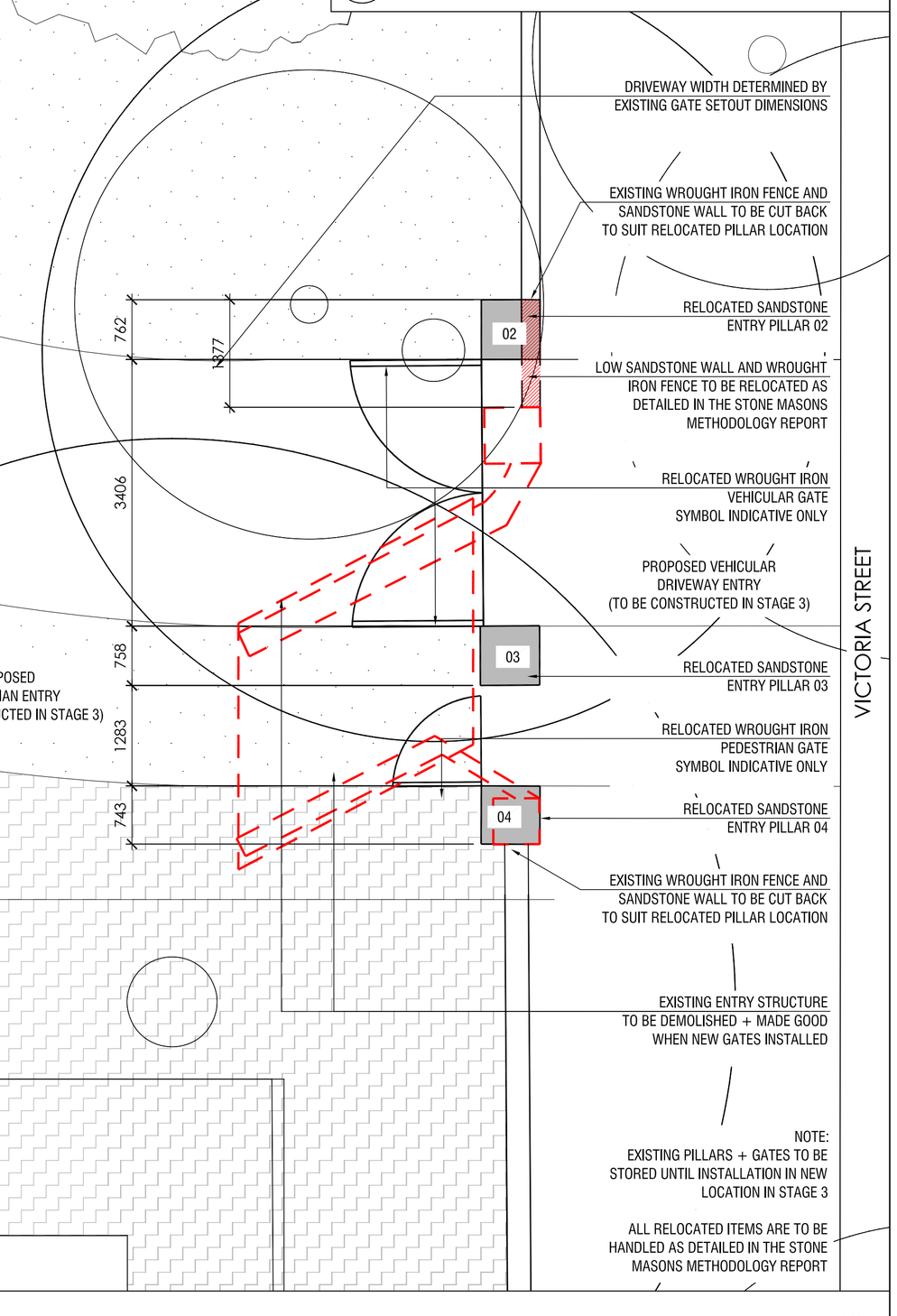

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DATE	DESCRIPTION	REV
02/08/13	ISSUE FOR REVIEW	A
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-	-	-
-	-	-
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DATE	DESCRIPTION	REV
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-	-	-
-	-	-

LANDSCAPE ARCHITECT | REVISIONS

CLIENT: STOCKLAND

ARCHITECT: AJ+C
ALLEN JACK + COTTIER

PROJECT: Cardinal Freeman Village

DRAWING TITLE: HERITAGE GATE RELOCATION PLAN 3/3

DRAWING PURPOSE: TENDER
DOCUMENTATION

DRAWING INFORMATION

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		APPROVED BY	RJ

NORTH

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REV.: C

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