Our Ref J050523B

19 October 2007

Pittwater Council
DX 9018
MONA VALE

Attention: Customer Service

Dear Sir/Madam,

Subject: **Amended Construction Certificate 2-J050523B**
Development Consent Permit N0029/04
Dan Murphy's, 25-29 Park Street, Mona Vale

We refer to the application for a Construction Certificate in respect of the above property

We confirm that an Amended Construction Certificate No J050523B was issued on 19 October 2007 pursuant to Development Consent N0029/04

Please find enclosed a copy of the Construction Certificate issued including all documentation assessed in the determination of the application

Also please find enclosed a cheque for $30 00 being the registration fee for the above It would be appreciated if a receipt in this regard could be forwarded to our firm as soon as possible

Should you require any further information please contact the undersigned

Yours faithfully.

Simon Dwyer
for **DLM Certification Pty Ltd**

Cc: Woolworths Ltd
P O Box 8000
BAULKHAM HILLS NSW 2153

Attention: Greg Lucas

Encl.

R 226822
$30.00 22/10/07

Suite 1, Level 5
56 Railway Parade
Burwood NSW 2134

Locked Bag 3013
Burwood NSW 1805
Ph 9715 2555
Fax 9715 2333
DX 8505

dlmc@dlmc com au www dlmc com au

Our Ref J050523B

19 October 2007

Woolworths Ltd
P O Box 8000
BAULKHAM HILLS NSW 2153

Attention Greg Lucas

Dear Greg,

Subject: **Amended Construction Certificate J050523B**
Development Consent Permit N0029/04
Dan Murphy's, 25-29 Park Street, Mona Vale

We refer to our engagement in respect of the above and enclose the Amended Construction Certificate for such works

Mandatory inspection of works

The Environmental Planning and Assessment Act 1979 require that the inspections detailed below, known as Critical Stage Inspections, be carried out by the Principal Certifying Authority (PCA)

The provision of certificates in lieu of mandatory inspections (ie Engineer's or waterproofing certificates) is not acceptable at any time

It is necessary for the following inspections to be carried out in relation to the proposed works

Class 5-9 buildings or parts of buildings

- At the commencement of the building work, being the time when ANY physical activity is commenced in connection with the erection of the building works. and
- Prior to covering any stormwater drainage connections, and
- After the building work has been completed and prior to any occupation certificate being issued in relation to the building

Builder to Arrange Critical Stage Inspections

The Principal Contractor for the building site is responsible for ensuring that the Principal Certifying Authority is given notice of at least ***at least 48 hours*** if a Critical Stage Inspection is required

Should you require any further information please contact the undersigned

Yours faithfully,

S.S Dwyer

Simon Dwyer
for ***DLM Certification Pty Ltd***

DLM
CERTIFICATION

AMENDED CONSTRUCTION CERTIFICATE
No. J050523B

FOR

WOOLWORTHS LTD

PREMISES

Dan Murphy's
25-29 Park Street, Mona Vale

Date: 19 October 2007

Ref: J050523B

AMENDED CONSTRUCTION CERTIFICATE No J050523B

DLM CERTIFICATION

CONSTRUCTION CERTIFICATE

Issued under the Environmental Planning and Assessment Act 1979
Section 109C(1). 81A(2) AND 81a(4)

Property to which this certificate relates

Address	Dan Murphy's 25-29 Park Street. Mona Vale		
Lot No	1	DP/SP	605804

Applicant

Name	Fabcot Pty Ltd
Address	1 Woolworths Way Bella Vista NSW 2153

Description of Development

This certificate is limited to alterations and additions to the existing building including the addition of a 1444m^2 liquor store, internal fit out, signage and alteration of the existing car park to accommodate 368 spaces approved pursuant to Development Consent N0029/04 dated 12 October 2005. modification dated 12 October 2006 and modification dated 12 December 2006 issued by Pittwater Council

This certificate is to be read in conjunction with Construction Certificate J050523 and applies only to the amended design and fire engineering report prepared by Engineered Fire &Safety Solutions dated August 2007

Consent details

Development Consent No	Date of determination
N0029/04	12 October 2005
DA Modification	12 October 2006
DA Modification	12 December 2006
Consent authority	Pittwater Council

Building classification **6**

Certification

I certify that work completed in accordance with the documentation contained in the annexures (with such modifications verified by me as may be shown on the documentation) will comply with the requirements of the Environmental Planning & Assessment Regulation 2000 as referred to in Section 81A(5) of the Environmental Planning & Assessment Act 1979

Certificate Number J050523B

Date of endorsement *19 October 2007*

Signature
Accredited Certifier *Simon Dwyer*
Accredited Body Building Professionals Board
Registration No *BPB0105*

Suite 1, Level 5
56 Railway Parade
Burwood NSW 2134

Locked Bag 3013
Burwood NSW 1805
Ph 9715 2555
Fax 9715 2333
DX 8505

AMENDED CONSTRUCTION CERTIFICATE No J050523B

DLM CERTIFICATIO

FIRE SAFETY MEASURES THAT FORM PART OF THIS CERTIFICATE

Issued in accordance with 168 (1) (c) of the Environmental Planning and Assessment Regulation 2000

Fire Safety Measure	Standard of performance	Proposed	Existing
Access panels, doors, and hoppers to Fire-resisting shaft	BCA Clause C3 13	Yes	Yes
Automatic fail safe devices	BCA Clause C3 4, D2 21(c)&(d) AS 1670 1-2004	Yes	Yes
Automatic fire suppression system (sprinkler)	BCA Spec E1 5, AS 2118 1-1999	Yes	Yes
Emergency lighting	BCA Clause E4 4. E4 2, AS/NZS 2293 1-1998	Yes	Yes
Exit signs	BCA Clause E4 5. E4 8. AS/NZS 2293 1-1998	Yes	Yes
Fire dampers	AS/NZS 1668 1-1998	Yes	Yes
Fire doors	BCA Spec C3 4, AS 1905 1-1997	Yes	Yes
Fire hydrant systems	BCA Clause E1 3. AS 2419 1-1994	Yes	Yes
Fire safety engineering	Alternative solution report prepared by Engineered Fire & Safety Solutions regarding EP2 2 and dated August 2005 & August 2007	Yes	no
Fire seals (protecting openings & service penetrations in fire resisting components of the building)	BCA Clause C3 15, Spec C3 15, Manufacturer's Specifications	Yes	Yes
Fire Hose Reel systems	BCA Clause E1 4, AS 2441-1988	Yes	Yes
Mechanical air handling systems	BCA Clause E2 2, E2 3, AS/NZS 1668 1-1998 and AS 1668 2-1991	Yes	Yes
Paths of travel, stairways, passageways and ramps	Part D1 of the BCA	Yes	Yes
Portable fire extinguishers	BCA Clause E1 6. AS 2444-2001	Yes	Yes
Smoke and heat detectors	BCA Clause E2 2, AS 1670 1-2004.	Yes	Yes
Warning and operational signs	BCA Clause D2 23. E3 3. Form 15B – EP&A Act	Yes	Yes

CONSTRUCTION CERTIFICATE DOCUMENTATION No J050523

DLM CERTIFICATION

Documentation assessed in the determination of Construction Certificate Application J050523

Annexure 1 - Plans and Specification that form part of Construction Certificate 1 pages

Annexure 2 – Supporting Documentation

Construction Certificate Application

Construction Certificate Application 3 pages
Owners Consent 1 page

Other Supporting Documentation

Fire Engineering Report
Engineered Fire & Safety Solutions
Dated August 2005 & 15 August 2007 51 pages

Clause 144 referral to NSW Fire Brigades
DLM Certification Pty Ltd
Dated 20 August 2007 1 page

Letter to NSW Fire Brigades regarding fire engineering report
DLM Certification Pty Ltd
Dated 19 October 2007 1 page

DLM CERTIFICATION

ANNEXURE 1

Plans and Specification that form part of Construction Certificate

CONSTRUCTION CERTIFICATE DOCUMENTATION No J050523

DLM CERTIFICATION

PLANS AND SPECIFICATION THAT FORM PART OF THIS CERTIFICATE:

Architectural documentation & specification as prepared by **EJE Architecture**

Drawing No.	Revision	Title	Date
A02	15	Site Plan	30 05 07
A03	12	New Ground Floor Plan	26 06 07
A04	17	Basement Plan	26 06 07
A05	10	Elevations	19 04 07
A06	9	Elevations	16 03 07
A07	10	Sections	16 03 07
A08	11	Sections	16 03 07
A09	8	New Ground Floor Reflected Ceiling Plan	16 03 07
A10	8	Basement Floor Reflected Ceiling Plan	12 01 07
A11	10	Roof Plan	16 03 07

Stormwater documentation & specification as prepared by **EJE Architecture**

Drawing No.	Revision	Title	Date
C-02	I	Ground Floor Plan	26 07 07

DLM CERTIFICATION

ANNEXURE 2

Supporting Documentation

CONSTRUCTION CERTIFICATE APPLICATION FORM

DLM CERTIFICATION

In accordance with Clause 139, Part 8, Division 2 of the Environmental Planning and Assessment Regulation 2000

I/We hereby make application to DLM Certification Pty Ltd for a Construction Certificate relating to the following

Description of property to which this application relates

Address 25-29 PARK ST, MONA VALE NSW 2103

Title details Lot No /s 1 DP 605804.

Applicant

Applicant Name WOOLWORTHS LIMITED

Address 1 WOOLWORTHS WAY BELLA VISTA NSW 2153

Contact Numbers Phone 02 8885 2056 Fax 8885 2056
E-mail hlau@woolworth.com.au Mobile 0439 403 433

Owner

Owner Name SANWICK P/L

Address 107 CARLINGFORD ST SEFTON NSW 2162

Contact Numbers Phone 9644 1747 Fax 9644 8074
E-mail — Mobile —

Description of Development

BUILDING WORKS

BCA Classification AS STATED ON DA CONSENT

Consent Details

Development Consent No N0029/04 Date of Determination 12 OCT 05

Consent Authority PITTWATER COUNCIL

Value of Building Works $ 400,000

New South Wales
Ashfield Court, Level 2
236-238 Liverpool Road
Ashfield NSW 2131
PO Box 1625, 1800
DX 21218
Ph 02 9799 7466
Fax 02 9799 7565

Queensland
47 Savoy Drive
Florida Gardens
Gold Coast QLD 4218
PO Box 337, 9726
Ph 07 5527 6274
Fax 07 5527 6274

CONSTRUCTION CERTIFICATE APPLICATION FORM

DLM CERTIFICATION

In accordance with Clause 139, Part 8, Division 2 of the Environmental Planning and Assessment Regulation 2000

Builder Details

Builders Name TBA

Address _____

_____

Contact numbers Phone _____ Fax _____
E-mail _____ Mobile _____

As owner(s) of the land to which the application relates, I/we consent to the making of this application. I/we also give consent for officers, relating to this application we confirm that building works are not commenced upon the subject site, certifiers of DLM Certification Pty Ltd to enter the land to carry out inspections relating to this application

REFER TO PREVIOUSLY PROVIDED
Owner's Signature AUTHORISATION LETTER Date
DATED 20/10/06.

Owner's Name

If signed on behalf of a Body Corporate or company, the common seal must be stamped on this section where appropriate

SIGNED BY THE APPLICANT

I apply for approval to carry out the development or works described in this application. I declare that all information I have provided is true and correct

Applicant's Signature 31/10/06 Date

Henry Law
Applicant's Name

New South Wales
Ashfield Corp, Level 2
286-288 Liverpool Road
Ashfield NSW 2131
PO Box 1025, 1660
DX 21218

Ph 02 9799 7455
Fax 02 9799 7556

Queensland
47 Savoy Drive
Florida Gardens
Gold Coast QLD 4218
PO Box 337, 9726

Ph 07 5527 6274
Fax 07 5527 6274

CERTIFICATE APPLICATION FORM

The following Schedule is required to be completed for the purposes of providing information to the Australian Bureau of Statistics – Residential Use Only.

PART A

Particulars of development

Area of land		Gross floor area of building	1,444 m²

Current use of all or parts of the building (s)/land (if vacant state 'vacant')?

Location	Use
• DAN MURPHY AREA	• LIQUOR RETAIL
• CARPARK AREA	• CARPARKING
Does the site contain a dual occupancy?	NO.
Gross floor area of addition of new building?	1,444m²

What are the proposed uses of all parts of the building(s)/land?

Location	Use
•	•
•	•
No of pre-existing dwellings	
No of dwellings to be demolished	
How many dwellings are proposed?	
How many storeys will the building consist of?	

PART B

Materials to be used - (place a tick in the ( ) which best describes the materials the new work will be constructed of)

Walls		Code	Roof		Code
Brick veneer	( )	12	Aluminium	( )	70
Full brick	( )	11	Concrete	( )	20
Single brick	( )	11	Concrete tiles	( )	10
Concrete block	(✓)	11	Fibrous cement	( )	30
Concrete/masonry	( )	20	Fibreglass	( )	80
Concrete	( )	20	Masonry/terra cotta shingle tile	( )	10
Steel	(✓)	60	Slate	( )	20
Fibrous cement	( )	30	Steel	(✓)	60
Hardiplank	( )	30	Terra cotta tile	( )	10
Timber/weatherboard	( )	40	Other	( )	80
Cladding-aluminium	( )	70	Unknown	( )	90
Curtin glass	(✓)	50			
Other	( )	80			
Unknown	( )	90			
Floor			Frame		
Concrete	(✓)	20	Timber	( )	40
Timber	( )	10	Steel	(✓)	60
Other	( )	80	Other	( )	80
Unknown	( )	90	Unknown	( )	90

SANWICK PTY. LTD.

A C N 002 153 460

107 Carlingford Street, Sefton. 2162 NSW
Phone: (02) 9644 1747, 9644 8074
Fax: (02) 9644 3334

20 October 2006

Pittwater Council
and DLM Consulting

Sanwick Pty Ltd, the owners of the property at 25-29 Park Street Mona Vale, authorise Woolworths Ltd to,

a) lodge Section 96 applications with Pittwater Council in relation to DA consent N0029/04
b) Issue the "Notice to commence", and
c) Appoint the Principal Certifying Authority.

Yours faithfully.

Nick Sanc
Managing Director
Sanwick Pty Ltd

Engineered Fire & Safety Solutions

Consultant Fire and Safety Engineers
Building Surveyors and Project Managers

Concept to Reality

15th August 2007

DLM Certification Pty Ltd
Locked Bag 3013
BURWOOD NSW 2134

Attention Mr Simon Dwyer

Dear Sir,

Re Dan Murphy's Liquor Store – Mona Vale
Fire Safety Engineering Report

Further to our discussions, we confirm that we have reviewed the drawings listed below and assessed their impact on the original Fire Safety Engineering Report carried out by this Company in 1995

It is observation that the store layout has been revised but holistically the premises are substantially similar to the layout that was assessed and modelled in the original report for the purposes of assessment of fire safety and egress

As a result of the above review, we have concluded that. for the purposes of submission to the NSW Fire Brigades. the egress assessments and modelling carried our for the original report are still applicable to the new store floor layout

EJE Architecture drawings referred to in the assessment of the revised layout are,
A02/15 – Site Plan
A03/12 – New Ground Floor Plan
A04/17 – Basement Plan
A05/10 – Elevations
A07/10 – Sections

We trust that this will suit your immediate needs Please do not hesitate to contact the Writer should there be any further information required

Yours faithfully.

Don Alexander MAppSc(Fire Safety Design) BTeach CEng FIFire E SFPE

Engineered Fire & Safety Solutions Pty Limited ABN 27 063 535 919
PO Box 814 Hornsby NSW 1630
Phone (02) 9487 5100 Fax (02) 9487 5120
www engineeredfire com au

Engineered Fire & Safety Solutions

(Pty Limited) ABN 27 063 535 919

Consultant Fire & Safety Engineers
Building Surveyors
Project Managers

PO Box 814 Hornsby NSW 1630 Australia
Phone 02 9487 5100 Fax 02 9487 5120

Concept to Reality

FIRE SAFETY ASSESSMENT

at

Dan Murphy's Mona Vale
Corner of Waratah, Keenan and Park Streets, Mona Vale, NSW

Prepared for

Projectvision International
Unit 11/8, Avenue of Americas
Newington NSW 2127

August 2005

DOCUMENT CONTROL			
Rev	Description	Date	Issued By
0	Original	09August 2005	DBA

DOCUMENT ISSUE RECORD			
Description	Issue to	Date	No Copies
Original	Projectvision International	9th August 2005	1 x pdf

INDEX

1 INTRODUCTION.

Engineered Fire & Safety Solutions Pty Limited were commissioned by Woolworths Limited through Projectvision International to carry out a Building Code of Australia (BCA) compliance review and fire safety assessment for the construction of a Dan Murphy's liquor outlet adjacent to the existing Woolworths Supermarket at the corner of Waratah, Keenan and Park Streets, Mona Vale, NSW

The following report is based on drawings provided by the Client These drawings are by EJE Architecture.

- Locality Plan, A00
- Site Plan, A02, amendment 1, April 2005
- New Ground Floor Plan, A03, amendment 1, April 2005
- Basement Plan, A04, amendment 1, Feb 2005
- Elevations, A05, amendment 1, Feb 2005
- Elevations, A06, amendment 1, Feb 2005
- Sections, A07, amendment 1, Feb 2005
- Sections, A08, amendment 1, Feb 2005

The report is based on the Report of Building Code of Australia 2004 – NSW Variation (BCA) non-compliances prepared by DLM Consulting and issued 7th March 2005 (ref J040634)

2 EXECUTIVE SUMMARY.

This report is an assessment of the BCA non-compliances, as noted by DLM Consulting for the proposed Liquor store, existing Supermarket and extended carpark in regards to perimeter vehicle access, egress provisions and smoke hazard management carried out by Engineered Fire & Safety Solutions Pty Limited

An existing supermarket, approximately 4,400m² in area, with associated undercroft parking is located on the site, within the block bounded by Waratah, Keenan and Park Streets and Akuna Lane, Mona Vale It is proposed to construct a Dan Murphy's liquor store (approximately 1410m² in area) to the Southwest of the existing supermarket and to extend the parking adjacent to Dan Murphy's liquor store and in the basement below both stores

Qualitative Analysis has been undertaken to assess the perimeter vehicle access and egress provisions from the basement carpark As described by the Fire Safety Engineering Guidelines an Evaluation Extent 1 Fire Engineering analysis was used for each analysis

The Quantitative Analysis was undertaken using deterministic methods for the full DtS non-compliance of smoke hazard management in Dan Murphy's liquor store and Woolworths supermarket As described by the Fire Safety Engineering Guidelines an Evaluation Extent 2 was used to address the issues of fire safety and to ensure that conditions in the travel area do not become untenable during the egress of occupants or for the intervention of the fire brigade

The entire Building (Dan Murphy's liquor store, Woolworths supermarket and basement carpark) is assessed as meeting the Performance Requirements of the BCA, as offering an environment for the occupants to evacuate safely in the event of a fire, and as offering facilities for Fire Brigade intervention

3 FIRE SAFETY ENGINEERING BRIEF.

A Fire Safety Engineering Brief (FSEB) is a documented process that defines the scope of the work for the Fire Safety Engineering analysis [1] Its purpose is to set down the basis, as agreed by all the relevant stakeholders, on which the Fire Safety analysis will be undertaken

This is a simple project, therefore the FSEB is limited to the identification of the essential aspects of the project, as noted in Section 1 2 of the Fire Safety Engineering Guidelines [1]

Acceptance criteria are set in order to determine whether the results of the analysis of a trial design meet the objectives or performance requirements these are.

(i) Smoke layer height to remain above 2 1m for the duration of the evacuation and fire brigade intervention (greater than 30 minutes), and
(ii) Available Safe Evacuation Time (ASET) greater than Required Safe Evacuation Time (RSET), providing a Factor of Safety (FOS) for evacuating occupants greater than 1, and
(iii) The building solution shall be as safe as, or greater than, the DtS solution

4 PURPOSE OF REPORT.

The purpose of this report is to assess identified non-compliance with the DtS requirements of the BCA and to provide Alternative Design Solutions to comply with the applicable Performance Requirements of the BCA The scope of the fire engineering assessment is limited to compliance with the BCA

The Fire Safety Report has been prepared with the following objectives

- To safeguard people from injury due to a fire in a Building.
- To safeguard occupants from injury while evacuating a Building during a fire.
- To facilitate the activities of emergency services personnel

For a Building Solution to comply with the BCA. Clause A0 4 of the BCA requires applicable Performance Requirements to be satisfied As per Clause A0 5 of the BCA, this can be achieved by complying with DtS Solutions, formulating an Alternative Solution. or a combination of these Solutions

In developing the Alternative Solutions contained in this report, Performance Requirements have been used to achieve compliance The following method (as per Clause A1 10 of the BCA) has been used to determine the relevant Performance Requirements

(a) The relevant DtS provisions to be subject to an Alternative Solution were identified based on the report prepared by DLM Consulting
(b) The Performance requirements directly relevant to the above DtS provisions were identified
(c) Any other Performance Requirements that are relevant to any aspects of the Alternative Solution were identified

For this Building. DtS Solutions have been provided for the permitter vehicle access and egress location requirements Alternative Solutions that have been assessed as meeting the following Performance Requirements have been provided for the noted DtS non-compliance of smoke hazard management The applicable Performance Requirements are,

- Performance Requirement CP9 (Fire Brigade vehicle access)
- Performance Requirement DP4 (location of exits)
- Performance Requirement EP2 2 (smoke hazard management)

The Assessment Methods, detailed in Part (a) of Clause A0 9 (Assessment Methods) of the BCA, that are used in this report to determine that the building solution complies with the Performance Requirements of the BCA are,

- Evidence to support that the use of a material, form of construction or design meets a Performance Requirement or Deemed to Satisfy Provision
- Expert Judgement

An Alternative Solution that has been assessed as meeting the Performance Criteria of the BCA has been provided for the noted DTS non-compliance of perimeter vehicle access, egress provisions and smoke hazard management

5 EXCLUSIONS.

This report does not cover

- Property protection of the Building or its contents (specifically)
- The structural adequacy of the existing and proposed Buildings
- Existing construction
- The requirements of either the energy or water authorities
- Environmental impacts
- A full BCA analysis

6 DESCRIPTION OF BUILDING AND USES.

6 1 BCA Classifications

Occupancy Classification – Class 6 (shop) and Class 7a (carpark)
Rise in storeys – 2 storey
Type of construction – Type C (advised by PCA)
Less than 25 m in height
Approximate gross floor area – 15,450 m² (Dan Murphy's liquor store ~ 1,410 m², Woolworths supermarket ~ 4,400 m², common foyer ~ 300 m², basement carpark ~ 9,340 m²)

6 2 Building Characteristics

An existing supermarket, approximately 4,400m² in area, with associated parking is located on the site, within the block bounded by Waratah Street, Keenan Street, Park Street and Akuna Lane, Mona Vale The existing building is fully sprinkler protected, sprinklers will be extended to cover the new works

It is proposed to construct a (Dan Murphy's) liquor store (approximately 1410m² in area) to the Southwest of the existing supermarket and to extend the parking adjacent to liquor store and in the basement below both stores

The undercroft carparking is separated from the shops by a concrete slab and is substantially open sided and can be considered as an open deck carpark

Vehicle entrance to the carpark is from Keenan Street or via a ramp from Waratah Street There is also pedestrian access to the Southeast basement foyer at the lower level carpark Four additional pedestrian exit doors that discharge direct to the street outside (Northwest, Northeast and Southeast) are provided in the existing carpark Three stairs connect the new basement carpark to the new carpark above

Direct access to the supermarket is provided in the Eastern corner of the carpark by a pedestrian ramp A central covered foyer provides access to both stores to the Southeast Entry to this foyer is from the upper Southwest carpark, a travelator from the basement carpark and Southeast steps and ramp from Akuna Lane Pedestrian access to the upper carpark is available via a ramp from Keenan Street Additional egress stairs are provided from the supermarket and an egress door is provided from the liquor store to the Northwest

To the Northwest of the site is a school, and to the Southeast are a number of shops

Mona Vale Fire Station is located less than 1km from the site, with Avalon Fire Station approximately 8 5km away by road and Narrabeen Fire Station approximately 5 5km away by road Expected response time to an alarm would be less than 10 minutes

6 3 Occupant Characteristics

Occupants of various ages and with varying mental and physical attributes, who may not be familiar with the Building, will be present during the day Staff will have a greater familiarity with the Building and are trained to assist in evacuation process

7 HAZARD AND RISK IDENTIFICATION.

This fire safety engineering report is based on the existence of a "normal" level of hazard and risk within the Building Where processes, contents or functional use of the Building provides a hazard level or risk that is above that normally expected in a Building it is necessary to assess the risk and undertake reduction or abatement procedures

This section of the report highlights the need for risk assessment by the Client/Operator and identifies fire hazards

7 1 Definitions

These terms are as defined in Section 1 3 of AS/NZS 4360 2004

Hazard – source of potential harm

Consequence – outcome of an event, can be expressed qualitatively or quantitatively

Likelihood – probability or frequency, can be expressed qualitatively or quantitatively

Risk – the chance of something happening that will have an impact upon objectives, the product of consequence and likelihood

7 2 Analyse Risk

Risk Analysis is the systematic process to understand the nature of and to deduce the level of risk present in a building

The Client/Operator needs to identify and evaluate the existing controls and then determine consequences and likelihood and hence the level of risk The process of this is outlined in AS/NZS 4360 2004 but beyond the coverage of this report

7 3 Identifying Hazard

Hazard identification involves a systematic review of the system under study to identify the type of inherent hazards that are present [AS/NZS 3931 1998]

A preliminary hazard analysis (PHA) [AS/NZS 3931 1998] is an inductive method of analysis whose objective is to identify the hazards, hazardous situations and events that can cause harm for a given facility The PHA should be continuously updated to allow for any new hazards Following is a table of potentially hazardous elements and situations in relation to fire only

Table 7 2 – PHA Checklist

Hazardous Elements	Hazardous Situations
Vehicles	Electrical faults
Flammable liquids	Fire
Food stuff	Hot work
Chemicals in wet & dry	Smoking
	Chemical Spills

Note that additional hazards/risks specific to the process/use that are not fire related will need to be identified by the Client/Operator

7 4 Hazard Abatement

Reduction in hazard can be achieved by,

- Spreading of fire load/fuel
- Limiting of fire load/fuel
- Sprinkler Protection
- Creating fuel blocks/separation
- Compartmentation
- Natural venting of smoke from carpark
- Emergency planning
- Appropriate operating procedures/precautions
- Passive and active fire protection systems
- Regular equipment maintenance and servicing
- Hazard reduction program/activities
- Emergency response

8 BCA REQUIREMENTS.

8 1 BCA Compliance Requirements

A full BCA analysis has not been performed for the Building. as this report is only presenting DtS and Alternative Design Solutions for perimeter vehicle access, egress provisions and services requirements It is assumed that the Building is DtS BCA compliant for all other fire safety issues

A report has been prepared by DLM Consulting (7th March 2005. ref J040634) in relation to the proposed Building The Report identified a number of departures from the Deemed to Satisfy (DtS) requirements of the BCA The departures are detailed individually below

8 2 Perimeter Vehicle Requirements

DtS Clause C2 3(b)(i) of the BCA requires a Class 6/7a large isolated building that does not exceed 18,000m² in floor area nor exceeds 108.000m³ in volume to be provided with perimeter vehicle access complying with Clause C2 4(b)

Clause C2 4(b) of the BCA requires that vehicle access is to be capable of providing emergency vehicle access and passage from a public road. have a minimum clear width of 6m with no part of its furthest boundary more than 18m from the building and must provide pedestrian access from vehicular access to the building

Perimeter vehicle access is provided by the four public roads that surround the site An assessment of perimeter vehicle requirements is made in Section 15 1 of this report

8 3 Location of Exits in Carpark

DtS Clause D1 5 of the BCA states that exits must be distributed as uniformly as practicable within the storey and that exits must be not less than 9m apart and not more than 60m apart

An assessment of travel distance and exits from the basement carpark is made in Section 15 2 of this report

8 4 Smoke Hazard Management

DtS Clause C2 3(a)(ii) of the BCA requires a Class 6/7 large isolated building that does not exceed 18.000m² in floor area nor exceed 108.000m³ in volume to be protected throughout by a sprinkler system complying with Specification E1 5 and perimeter vehicle access complying with BCA Clause C2 4(b)

The Building (liquor store. Woolworths supermarket and basement carpark) is fully sprinkler protected An analysis of perimeter vehicle access has been performed previously in Section 8 2 It is assessed that the Building is compliant in the large isolated building requirements as it is sprinkler protected and provided with a DtS compliant perimeter vehicle access

DtS Clause E2 2 and Table E2 2b (NSW) of the BCA requires a Class 6 building with a fire compartment exceeding 2000m² to be provided with an automatic smoke exhaust system or automatic smoke and heat vents

A fire safety assessment of smoke hazard management requirements is made in Section 14 2 of this report

9 DETERMINATION OF CATEGORY OF EVALUATION EXTENT.

Each DtS non-compliance that is to be addressed by an Alternative Solution is analysed to identify which fire safety sub-systems, as listed in the Fire Safety Engineering Guidelines [1], are affected

A Fire Safety Engineering analysis can be categorised into one of three alternative evaluation extents [1] Each DtS non-compliance is analysed to identify which sub-systems are affected These sub-systems are

- Sub-system A, fire initiation and development and control
- Sub-system B, smoke development and spread and control
- Sub-system C, fire spread and impact and control
- Sub-system D, fire detection, warning and suppression
- Sub-system E, occupant evacuation and control
- Sub-system F, fire brigade intervention

Evaluation Extent 1 Fire Engineering analyses [1] are to be used in the Quantitative Analysis to address the issue of Fire Brigade vehicle access and exit location in the carpark

An Evaluation Extent 1 (single sub-system) Fire Engineering analysis is performed when only one subsystem is analysed Typically the Evaluation Extent may include qualitative or quantitative analysis, may use analysis to demonstrate that the performance of the proposed single fire safety sub-system (or component thereof) can be anticipated either to be equivalent to or better than the corresponding sub-system, or to meet the appropriate performance criterion and may consider only the worst credible fire scenario

The sub-system to be analysed in this report for non-compliance of Fire Brigade vehicle access is sub-system F, fire brigade intervention

The sub-system to be analysed in this report for non-compliance of exit location in the basement carpark is sub-system E, occupant evacuation and control

An Evaluation Extent 2 Fire Engineering analysis [1] is to be used in the Quantitative Analysis to address the issue of smoke hazard management in Dan Murphy's liquor store and Woolworths supermarket, and to ensure that conditions in the travel area do not become untenable during the egress of occupants

An Evaluation Extent 2 (multiple sub-systems) Fire Engineering analysis is performed when more than one, but less than six, subsystems are analysed Typically the Evaluation Extent may involve an absolute or comparative type of evaluation, may be based on multiple deterministic analyses and may generally encompass analysis of several fire scenarios, with appropriate sensitivity studies to ensure that a range of possible situations is covered

The sub-systems analysed in this report for non-compliance are,
Sub-system A, fire initiation and development and control, is used to define fires in the enclosure of fire origin as well as enclosures to which the fire has subsequently spread
Sub-system B, smoke development and spread and control, is used to analyse the development of smoke, its spread within the building and the properties of the smoke at locations of interest
Sub-system D, fire detection, warning and suppression, is used to analyse detection, warning and suppression for fires
Sub-system E, occupant evacuation and control, is used to analyse the evacuation of the occupants of a building

10 METHOD OF ANALYSIS.

A Quantitative Analysis will be undertaken, using deterministic fire modelling methods for the DtS non-compliance of smoke hazard management in liquor store and Woolworths supermarket, as listed in Section 8 An Evaluation Extent 2 Fire Engineering analysis (as described by the Fire Safety Engineering Guidelines [1]) is to be used to address the issues of fire safety and to ensure that conditions in the travel area do not become untenable during the egress of occupants

This analysis will involve computer simulation of fire development and smoke spread. along with hand calculations of occupant movement Sensitivity studies. factors of safety and redundancies will be incorporated into the process

Fire engineering modelling has been carried out for selected areas within the Building using the deterministic zone models "FAST v 3 1 7" to assess fire growth and spread These fire engineering modelling programs will be discussed further in Section 12

The level of the hot upper layer (smoke level) will be used as the time to untenability and then compared to the evacuation time to assess occupant egress (see Section 13) Evacuation time is the time required for occupants to recognise the existence of a fire, react and evacuate the building The calculated evacuation time is measured from ignition of a fire

Time to untenability and evacuation time for the modelled spaces will be compared Design Solutions will be provided as necessary to ensure that occupants can evacuate from the fire environment before conditions become untenable and will include a safety factor

A Qualitative Analysis will be undertaken for the DtS non-compliance of Fire Brigade vehicle access and exit location in the carpark. as listed in Section 8 In this analysis, the Building is compared to the DtS provisions and, using engineering judgement a conclusion is made regarding the Building suitability

11 LIFE SAFETY.

11 1 Life Safety

In the majority of fire situations, the overriding concern is to evacuate the occupants before they can be affected by smoke Smoke compromises the total effluents from a fire, which contain narcotic and irritant fire products [2] For this reason it is important to evacuate the occupants before they can be affected by heat and smoke This is best achieved by evacuating the occupants during the initial stage of the fire [3]

Untenable conditions are considered to occur when the smoke layer reaches 2 1m above the floor (a conservative estimate of height for the majority of occupants) Below this level the smoke is considered to obscure the occupants vision and to be breathed in by the occupant [4]

Visibility and toxicity of the smoke layer have not been considered, as (see Section 13) occupants have egressed from the area of concern before the smoke reaches the head height of occupants

11 2 Fire Modelling Acceptance Criteria

Acceptance Criteria for Dan Murphy's liquor store and Woolworths supermarket are as follows

1 The level of the hotlayer formed in a fire does not extend to a height lower than 2 1 m above the floor during the time of egress of occupants [4]
2 An appropriate Factor of Safety is provided in the modelling and egress assessment to allow for unforseen occurrences

Assessment of levels of safety of occupants during a fire has been assessed by the comparison of Available Safe Egress Time (ASET) to Required Safe Egress Time (RSET) with a Factor of Safety (FOS) determined in accordance with the Fire Engineering Guidelines [4]

12 FIRE MODELLING.

12 1 Modelling Methodology

Engineering fire modelling was carried out on Dan Murphy's liquor store and Woolworths supermarket using a deterministic model These models make use of the physics and chemistry associated with the fire environment to make predictions about fire development The models used are the computer software "FAST v 3 1 7" and "FAST v 5 1" This software was developed by the National Institute of Standards and Technology - Fire Research Laboratory in the USA and allows up to 30 interconnected spaces to be modelled simultaneously to assess fire growth and spread

As the fire model defines compartments as three dimensional rectangles. Dan Murphy's liquor store was divided up into a total of 15 spaces (see Appendix B) and Woolworths supermarket was divided into 12 spaces (see Appendix B) Each compartment is divided into two spatially homogenous volumes. a hot upper layer and a cool lower layer

The input data required for fire engineering modelling using the software "FAST v 3 1 7" and "FAST v 5 1" is room layout and design fire heat release rate Dimensions and materials of the areas modelled are based on information from plans

Sprinkler activation is calculated by the Sprinkler/Detector program in "FAST v 3 1 7" Properties of the sprinkler head (activation temperature and RTI), along with distance from the sprinkler head, compartment height and fire growth are entered into the program and the sprinkler activation time is calculated From this the peak heat release of the sprinkler activated fire can be calculated

Once sprinkler activation and peak heat release rates were calculated in "FAST v 3 1 7", the fire growth rate was entered into "FAST v 5 1" and various scenarios were run to calculate smoke layer height and upper layer temperature

12 2 Design Fire Scenarios

The Building is sprinkler protected, so fires are expected to be controlled To provide a worst case scenario, all fires are considered to be controlled (constant RHR after peak value is reached) Sprinkler reliability data indicates a high probability [1] of sprinkler activation (0 95 for non-flashover fires and 0 99 for flashover fires) Data on successful control of fires [1] indicates that control is achieved in over 99% of fires in sprinklered buildings

Fires were modelled for 1800 seconds (30 minutes) over a range of growth and heat output characteristics This represents the range of size and growth expected and to allow an assessment of sensitivity of modelling

Design fires for modelling of fire scenarios in these Buildings are based on the assessed hazards that exist in the various areas These include products on shelves and alcohol

Fire models were run for the various scenarios and are listed in Appendix C For Dan Murphy's liquor store, a total of 23 fire scenario modelling runs were undertaken Eleven of these scenarios are presented in Appendix D, as the remaining 12 were performed for sensitivity analysis and comparison purposes For the Woolworths supermarket, a total of 11 fire scenario modelling runs were undertaken Five of these scenarios are presented in Appendix D, as the remaining six were performed for sensitivity analysis and comparison purposes

The scenarios were run at ambient temperature (20°C)

12 3 Expected Fire Growth

Fire growth characteristics have been shown, for a large number of commercial premises fires, to grow on a pattern that approximates fire heat output in relation to growth time squared (known as t^2 fire growth)

For the Building, Fast t^2 fires were modelled Fast t^2 fires involve thin combustible items of lightweight construction, such as high stacked wood pallets, cartons on pallets and some upholstered furniture [5]

Each modelled fire is located in the centre of the space considered and at floor level To model unconstrained growth of a non-sprinkler controlled fire, the growth and level off times were assessed and entered to imitate realistic fires The standard modelling period was 1800 seconds The time for the end of the growth period (without sprinkler activation) was 465 seconds for approximately a 10 MW fire

This 10MW fire was used in "FAST v 3 1 7" to calculate sprinkler activation times Sprinkler activation was calculated, based on a ordinary hazard system, with an activation temperature of 68°C and an RTI of 150(ms)^{½} Maximum radial distance of 2 5m from fire to sprinkler head was used Height to the sprinkler head is that from floor to ceiling above

Sprinkler activation for all scenarios is indicated as occurring at the times listed in Table 12 1 (Dan Murphy's liquor store) and 12 2 (Woolworths supermarket), with the corresponding peak heat release rate

Table 12 1 – Sprinkler Activation Time & Fire Size in Dan Murphys Liquor Store

Location	Fire Growth	Sprinkler Activation	Peak RHR
Rear storage area	Fast t^2	200 s	1 9 MW
Rear lunch room	Fast t^2	160 s	1 2 MW
Fine wine retail area	Fast t^2	170 s	2 3 MW
NW retail area	Fast t^2	220 s	2 1 MW
SE retail area	Fast t^2	210 s	1 5 MW
Cashier area	Fast t^2	180 s	1 2 MW
Foyer	Fast t^2	230 s	2 5 MW

Table 12 2 – Sprinkler Activation Time & Fire Size in Supermarket

Location	Fire Growth	Sprinkler Activation	Peak RHR
Entry	Fast t^2	180 s	1 5 MW
Produce area	Fast t^2	180 s	1 5 MW
SW retail area	Fast t^2	190 s	1 7 MW
NE retail area	Fast t^2	190 s	1 7 MW
Bakery	Fast t^2	160 s	1 2 MW

12 4 Fire Modelling Results – Dan Murphy's Liquor Store

Identification of modelling spaces is sketched in Appendix B Description of each scenario is tabulated in Appendix C Results for the Hot Layer Temperature, Layer Height and Fire Heat Output are provided graphically and included in Appendix D

Fire modelling in Dan Murphy's liquor store was performed with the door between the back of house (BOH) areas and the front retail area that will be accessed by the public open. and the door closed When the door is closed smoke does not spread from one area to the other

Table 12 3a, 12 3b and 12 3c show the times for the hot smoke layer to reach 2 1m above the floor level This smoke layer height corresponds to the onset of untenable conditions [4] Note that for clarity purposes the upper level spaces in the BOH area are not tabulated

These results are discussed further in relation to occupant egress and fire brigade intervention in Section 13 of this report

Table 12 3a – Approximate time for the Hot Layer to reach 2 1m from Floor Level in BOH Area (door closed)

Scenario	BOH	BOH Hall	Lunchroom
Dan_1	240 s	210 s	280 s
Dan_2	280 s	220 s	10 s

Table 12 3a indicates that a fire in the BOH area would cause untenable conditions in most of the BOH area between 240-280 seconds Untenable conditions are rapidly reached in the lunchroom with a fire located here, as this is a small space Time to untenability in the BOH area is that for the majority of the area 240 seconds will be used for the Factor of Safety (FOS) calculation in Section 13 5

Table 12 3b – Approximate time for the Hot Layer to reach 2 1m from Floor Level in Retail Area (door closed)

Scenario	Fine Wine NW	Store NWa	Store NWb	Store SE	Fine Wine SE	Cashier SW	Cashier NE	Foyer SW	Foyer NE
Dan_3	480 s	420 s	350 s	390 s	430 s	370 s	360 s	310 s	340 s
Dan_4	310 s	390 s	350 s	330 s	300 s	300 s	310 s	265 s	290 s
Dan_5	340 s	340 s	340 s	380 s	330 s	340 s	350 s	290 s	320 s
Dan_6	310 s	310 s	310 s	340 s	320 s	350 s	400 s	300 s	340 s
Dan_7	290 s	270 s	270 s	310 s	310 s	340 s	340 s	410 s	360 s

Fire modelling indicates (Table 12 3b) that untenable conditions are reached earliest in Scenario Dan_4 in approximately 4 4 minutes (265 seconds) in the SW foyer space Untenable conditions occur later in other spaces and other scenarios

Table 12 3c – Approximate time for the Hot Layer to reach 2 1m from Floor Level in Liquor Store (door open)

Scenario	BOH	BOH Hall	Lunch	Fine Wine NW	Store NWa	Store NWb	Store SE	Fine Wine SE	Cash SW	Cash NE	Foyer SW	Foyer NE
Dan_8	260s	215s	10s	680s	930s	810s	750s	660s	720s	730s	700s	730s
Dan_9	820s	760s	910s	480s	420s	350s	390s	430s	370s	360s	310s	340s
Dan_10	700s	660s	760s	310s	390s	350s	330s	300s	300s	310s	265s	290s
Dan_11	690s	620s	780s	310s	310s	310s	340s	320s	350s	410s	300s	340s

Fire modelling indicates (Table 12 3c) that with a fire in the BOH lunchroom untenable conditions are reached in the main BOH area in Scenario Dan_8 in approximately 4 3 minutes (260 seconds) in the BOH space Untenable conditions are reached quickly in the small lunchroom Untenable conditions are reached earliest in the retail area in Scenario Dan_8 in approximately 11 minutes (660 seconds) in the BOH space Untenable conditions occur later in other spaces

Fire modelling indicates (Table 12 3c) that with a fire in the retail area untenable conditions are reached earliest in the main BOH area in Scenario Dan_11 in approximately 11 5 minutes (690 seconds) in the BOH space Untenable conditions are reached earliest in the retail area in Scenario Dan_10 in approximately 4 4 minutes (265 seconds) in the SW foyer space Untenable conditions occur later in other spaces and other scenarios

The Southern exit to the open carpark is within the Fine Wine SE space Untenable conditions occur earliest in this space at approximately 300 seconds with a 2 3MW sprinkler controlled fire located in the Store NWa space (scenario Dan_4 and scenario Dan_10) This time will be used for the FOS calculation to the Southern exit in Section 13 5

The Southeast exit requires travelling through the foyer Untenable conditions occur earliest in this area at approximately 265 seconds with a 2 3MW sprinkler controlled fire located in the Store NWa space (scenario Dan_4 and scenario Dan_10) This time will be used for the FOS calculation to the Southeast exit in Section 13 5

Temperatures in the fire compartment for the duration of the modelling period are indicated as being below the human radiant heat tolerance limit (200°C) The maximum fire compartment temperature reached in any scenario is approximately 176°C in the Cashier area. with a fire in that location and the door to the BOH area open Temperatures in the lunchroom reach approximately 403°C with a fire in that location and the door to the BOH area open Although this is greater than the human radiant heat tolerance limit occupants are able to egress from this room before temperatures become life threatening

12 5 Fire Modelling Results – Woolworths Supermarket

Identification of modelling spaces is sketched in Appendix B Description of each scenario is tabulated in Appendix C Results for the Hot Layer Temperature. Layer Height and Fire Heat Output are provided graphically and included in Appendix D

Table 12 4 shows the times for the hot smoke layer to reach 2 1m above the floor level for the various fire growths This smoke layer height corresponds to the onset of untenable conditions [4]

These results are discussed further in relation to occupant egress and fire brigade intervention in Section 13 of this report

Table 12 4 – Approximate time for the Hot Layer to reach 2 1m from floor level in Supermarket

Scenario	Entry	Bake	SE	Meat	Cool	Prod	Prod SE	Store SE	Store SW	Store NW	Store NE
Wool_1	1180s	930s	990s	850s	750s	880s	1020s	870s	770s	640s	730s
Wool_2	840s	840s	890s	850s	760s	970s	920s	830s	800s	620s	670s
Wool_3	680s	620s	660s	640s	750s	740s	750s	810s	920s	770s	690s
Wool_4	640s	580s	610s	590s	350s	660s	710s	810s	720s	830s	1000s
Wool_5	1100s	1230s	1160s	970s	750s	970s	1020s	880s	790s	620s	710s

Fire modelling indicates (Table 12 4) that untenable conditions are reached earliest in Scenario Wool_4 in approximately 9 7 minutes (580 seconds) This occurs in the Bakery with a 1 7MW sprinkler controlled growth fire located in the NE area of the Supermarket Untenable conditions are reached later in other spaces and in the other scenarios

The Northeast exit to the ramp is within the Store NE space Untenable conditions occur earliest in this space at approximately 670 seconds with a 1 5MW sprinkler controlled fire located in the Produce space (scenario Wool_2) This time will be used for the FOS calculation to the ramp exit in Section 13 5

The Southwest exit to the foyer is within the Entry space Untenable conditions occur earliest in this space at approximately 640 seconds with a 1 7MW sprinkler controlled fire located in the Store NE space (scenario Wool_4) This time will be used for the FOS calculation to the foyer exit in Section 13 5

The Southeast exit to the stairs is within the Produce SE space Untenable conditions occur soonest in this space at approximately 710 seconds with a 1 7MW sprinkler controlled fire located in the Store NE space (scenario Wool_4) This time will be used for the FOS calculation to the Southeast stair exit in Section 13 5

Temperatures in the fire compartment for the duration of the modelling period are indicated as being below the human radiant heat tolerance limit (200°C) Maximum temperature reached in any scenario in the fire compartment is approximately 183°C with a fire located in the entry

12 6 Model Sensitivity

A sensitivity analysis is a study of how changes in model parameters affect the results generated by the model Previous research has shown that for a similar scenario, reasonable uncertainties in room dimensions have little effect on the results predicted by the model [6] It has also been shown, that in general, the thermophysical properties of the walls have a small effect on the results, and the floor contribution is usually negligible [7]

Sensitivity of the model to the rate of heat release (RHR) of the fire was investigated by running the scenarios with other t^2 growth fires (Medium t^2 growth and Ultra-Fast t^2 growth) This showed, that as the RHR increases, the maximum temperature increases and the smoke layer height reaches a level considered as untenable more quickly As the RHR is reduced, the smoke layer reaches a level considered as untenable more slowly and the maximum temperature decreases

Sensitivity of the model to the activation of the sprinkler system was investigated by modelling the closest sprinkler head as not operating and so the fire is controlled by the next closest sprinkler (radial distance of 6 2m) By delaying the sprinkler activation, the fire heat output is greater and so the smoke layer reaches untenable conditions more quickly than if the closest sprinkler had activated The maximum temperature reached in the fire compartment is also greater with delayed sprinkler activation

The achieved results are therefore not considered to be "sensitive" to minor data changes and thus solutions may be considered as reliable

Full results of the sensitivity analysis have not been presented in this report, but are available in design files if required

13 EVACUATION OF OCCUPANTS.

Comparison of egress time from the building is compared to time to untenability to indicate whether occupants can egress

13 1 ASET

ASET (Available Safe Evacuation Time) is defined as the time from the commencement of a fire to the onset of untenable (life threatening) conditions within the enclosure The onset of untenable conditions has been taken as that set in Section 11 2 – Acceptance Criteria

The ASET in this report is determined by the level of the hotlayer formed in a fire This level should not extend to a height lower than 2 1 m above the floor during the time of egress of occupants [4] It should be noted that toxicity has not been considered in this assessment as the hotlayer is not expected be below head height during the period of evacuation

The ASET is based on the most severe result for the location of the assessed exit, as noted in Sections 12 4 and 12 5

13 2 RSET

RSET (Required Safe Evacuation Time) is the time required for occupants to recognize the existence of a fire. react and evacuate the Building

The calculated evacuation time is measured from ignition of a fire This time is given by

$$RSET = P_c + P_r + P_d + P_m \quad [1]$$

where

- P_c Cue Period Time from ignition until detection of the fire (usually by a Building occupant or by an automatic detection system)
- P_r Response Period Time from alarm until the occupants make a decision to respond
- P_d Delay Period Time for occupants to investigate the fire, collect belongings. fight the fire
- P_m Movement Period The actual time required to traverse the escape route until a place of safety is reached

Occupants may be of varying ages and mental physical abilities and may not be very familiar with their surroundings

13 3 RSET Calculation for Dan Murphy's Liquor Store

The times for the calculation are as shown below

- Cue Period (P_c)

Initial fire and egress modelling indicated a large pre-movement time based on sprinkler activation that could mean that occupants may need to evacuate through smoke It is therefore proposed to install a smoke detection system to the Liquor Store that will provide a detection time of 30 seconds throughout the Store

- Response Period (P_r)

6 seconds to respond to normal fire stimuli [8] (sighting/smelling of smoke)

- Delay Period (P_d)

30 seconds This is conservative to allow for the possibility that occupants may collect personal items before evacuating

- Movement Period (P_m)

Occupant numbers are based on the occupant density of 5m² per person in Table D1 13 for a shop multiplied by usable floor area (500m²). giving 100 occupants Useable floor area is approximately 50% of total retail floor area. as approximately 50% of the floor area is taken up by shelving and checkout counters Five occupants are located in the BOH area

With the known occupant loading, floor area and travel distances. calculations were performed to estimate traversal time through the Liquor Store and final exit. and then overall travel time To represent a severe situation. egress is based on an occupant located furthest from an exit. in the coolroom This occupant has the greatest distance to travel to either the South (to carpark) or Southeast (Store front) exits

Most occupants are modelled as egressing through the front of the Store (Southeast exit) as this would be the way they entered the building and so would be the exit they are most familiar with The fire exit through BOH areas is not included for occupants in the retail area as this would be an unfamiliar route By not using all available exits, redundancy is provided in the form of alternative unhindered means of egress of the non-examined exit

Occupants exiting to the Southeast can either travel through the cashier counters and roller doors or the Southeast fire door For purposes of engineering analysis. numbers are evenly spread amongst the three cashier lines and the fire door. as occupants would easily be able to move between queues Once in the common foyer most occupants are modelled as moving to the external carpark, with a smaller number exiting through the Stair into Akuna Lane All occupants in the BOH exit through the Southwest (rear) exit

As the occupant density is less than 0 5 occupants/m², flow is assessed as uncongested [5] This means that speeds of about 70 m/min for level travel can be achieved

Table 13 1 gives results of the calculations The travel time to an exit is that for the last occupant to reach the exit point Other occupants would have reached the exit before this time

Table 13 1a – Results of Travel Time calculation for Retail Area

	Southeast Exit (cashier) through Foyer to Carpark	Southeast Exit (fire door) through Foyer to Akuna Lane	South Exit to Carpark
Useable Floor Area (A_f)	500 m²		
Number Occupants (N_o)	100		
Density (D_o)	0 2 occupants/m² (equivalent to 5m²/person. BCA Table D1 13)		
Occupants using exit	60	20	20
Speed of Travel (S)	70 m/min	70 m/min	70 m/min
Length of Travel (L_t)	46 m (cool room to front exit)	46m (cool room to front exit)	59 m (cool room to South exit to carpark
Traversal Time (T_{tr1})	0 66 min	0 66 min	0 84 min
Travel Time through Exit (T_{ex})	0 3 min (into foyer through cashier)	0 3 min (into foyer through fire door)	NA
Length of Travel (L_t)	35 m through foyer to external carpark	7 m through foyer to Stair 5	NA
Traversal Time (T_{tr2})	0 5 min	0 1 min	NA
Travel Time into Stair (T_{st})	NA	0 3 min	NA
Speed of Travel Down Stair (S_s)	NA	57 m/min	NA
Length of Stair (L_{ts})	NA	5 m	NA
Travel Down Stair (T_{trs})	NA	0 09 min	NA
Travel Time through Final Exit (T_{exf})	1 0 min	NA	0 3 min
Travel Time (P_m)	2 5 min	1 5 min	1 1 min

Table 13 1b – Results of Travel Time calculation for BOH Area

	Southwest Exit
Useable Floor Area (A_f)	320 m²
Number Occupants (N_o)	5
Density (D_o)	0 02 occupants/m² (equivalent to 5 occupants)
Speed of Travel (S)	70 m/min
Length of Travel (L_t)	35 m
Traversal Time (T_{tr})	0 5 min
Travel Time through Final Exit (T_{exf})	0 08 min
Travel Time (P_m)	0 9 min

Table 13 2 - Formulas for Travel Time calculation

$D_o = \frac{N_o}{A_f}$
$T_{tr} = \frac{L_t}{S}$ $\quad$ $T_{trs} = \frac{L_{ts}}{S_s}$

$T_{ex}=tN_o$
1 second per person (t) under moderate to optimum flow density conditions to move through a standard 0 9m exit door [3] Also used for time to move through cashier lanes
$P_m=T_{tr1}+T_{ex}+T_{tr2}+T_{st}+T_{trs}+T_{exf}$

By combining the calculated and assessed times for the four different exit activities (P_c, P_r, P_d and P_m), RSET was calculated, as shown in Table 13 3

Table 13 3 – RSET for Various Exits from Dan Murphy's Liquor Store

Southeast Exit through Foyer to Carpark	Southeast Exit through Foyer to Akuna Lane	South Exit to Carpark	BOH Southwest Exit
3 6 min	2 6 min	2 2 min	2 0 min

13 4 RSET Calculation for Woolworths Supermarket

The times for the calculation are as shown below

- Cue Period (P_c)

190 seconds based on sprinkler detection of a fire located in the NE area of the Supermarket (for exit into the foyer from Entry and stair from Produce SE)
180 seconds based on sprinkler detection of a fire located in the Produce area of the Supermarket (for exit into the ramp from the Store NE)
Occupant detection may occur sooner, however, sprinkler activation is used as a worst case scenario

- Response Period (P_r)

6 seconds to respond to normal fire stimuli [8] (sighting/smelling of smoke)

- Delay Period (P_d)

30 seconds This is conservative to allow for the possibility that occupants may collect personal items before evacuating

- Movement Period (P_m)

Occupant numbers are based on the occupant density of 5m² per person in Table D1 13 for a shop multiplied by usable floor area, giving 342 occupants (round up for division to exits) Useable (nett) floor area is approximately 50% of total retail floor area, as shelving and checkout counters take up approximately 50% of the floor area

With the calculated occupant loading, floor area and travel distances, calculations were performed to estimate traversal time through the Supermarket and final exit, and then overall travel time Occupants are expected, as a worst case scenario, to egress through exits where they entered For this reason three exits were included in the assessment, through the entry to the foyer, into the Northeast ramp and into a Southeast fire stair (as this exit is adjacent to the main entry) 114 occupants are modelled as using each exit

To represent a severe situation, egress is based on an occupant located furthest from an exit As occupants are expected to be distributed throughout the store, it is unlikely that they will all arrive at the exit at the same time Thus it is assumed that one-third of the occupants using each exit

have egressed the Store before the most distant occupant has reached the exit Queuing time is therefore based on two-thirds of the occupants using the exit
As the occupant density is less than 0 5 occupants/m^2, flow is assessed as uncongested [5] This means that speeds of about 70 m/min for level travel can be achieved

Table 13 4 gives results of the calculations The travel time is that for the last occupant to reach the exit point Other occupants would have reached the exit before this time

Table 13 4 – Results of Travel Time calculation in Woolworths Supermarket

	Exit via Entry	Exit via Ramp	Exit via Stair
Useable Floor Area (A_f)	1700 m^2		
Number Occupants (N_o)	342		
Density (D_o)	0 2 occupants/m^2 (equivalent to 5m^2/person. BCA Table D1 13)		
Occupants using Exit	114	114	114
Speed of Travel (S)	70 m/min	70 m/min	70 m/min
Length of Travel (L_t)	74 m	83 m	60 m
Traversal Time (T_{tr})	1 1 min	1 2 min	0 86 min
Travel Time through Final Exit (T_{exf}	1 3 min	1 3 min	1 3 min
Travel Time (P_m)	2 4 min	2 5 min	2 2 min

Table 13 5 - Formulas for Travel Time calculation

$D_o = \frac{N_o}{A_f}$
$T_{tr} = \frac{L_t}{S}$
$T_{ex} = tN_o$ 1 second per person (t) under moderate to optimum flow density conditions to move through a standard 0 9m exit door [3]
$P_m = T_{tr} + T_{ex}$

By combining the calculated and assessed times for the four different exit activities (P_c, P_r, P_d and P_m). RSET was calculated, as shown in Table 13 6

Table 13 6 – RSET for Various Exits from Woolworths Supermarket

Exit via Entry	Exit via Ramp	Exit via Stair
6 2 min	6 1 min	6 0 min

13 5 Factor of Safety Calculation

If the RSET is less than ASET, the safety of the occupants should be assured In addition, a factor of safety (FOS) needs to be indicated to ensure that any unforeseen delays are accounted for in safety levels That is

$$FOS = \frac{ASET}{RSET}$$

where FOS is some factor of safety It is recommended [4] that the FOS be greater than 1 Acceptance criteria for the FOS adopted by EFSS is no less than 1

The occupant numbers, travel distances and response times have been allowed on a conservative basis, therefore the following factor of safety is also conservative The larger the FOS, the safer it is for occupants and the greater the allowance for unseen delays

Table 13 7 – Dan Murphy's Liquor Store FOS

	RSET (Section 13 3)	ASET (Section 12 4)	FOS
Southeast Exit through Foyer to Carpark	3 6 min	4 4 min	1 2
Southeast Exit through Foyer to Akuna Lane	2 6 min	4 4 min	1 7
South Exit to Carpark	2 2 min	5 0 min	2 3
BOH	2 0 min	4 0 min	2 0

Table 13 8 – Woolworths Supermarket FOS

	RSET (Section 13 4)	ASET (Section 12 5)	FOS
Exit via Entry	6 2 min	9 7 min	1 6
Exit via Ramp	6 1 min	11 2 min	1 8
Exit via Stair	6 0 min	11 8 min	2 0

The above table indicates that the FOS is greater than one Occupants are able to egress the building before conditions become untenable

Considering the ASETs used from the sensitivity analysis for a faster growth fire, slower growth fire and delayed sprinkler activation the calculated FOS's are greater than one

14 ALTERNATIVE SOLUTIONS.

14 1 Summary of Performance Requirements to be Addressed

The following are those Performance requirements which are to be addressed in providing an alternative solution for Fire Safety in this Building See Appendix C for details of meeting performance criteria

Table 14 1 - Performance Requirements

Performance Criteria	BCA Clause Requirement	Performance Comments
EP2 2	E2 2 and Table E2 2b	Fire modelling indicates adequate time for egress from Dan Murphy's liquor store and Woolworths supermarket without smoke exhaust

14 2 Smoke Exhaust Requirements

Performance Requirement EP2 2 of Section E (Services and Equipment) the BCA states that

(a) In the event of a fire in a building the conditions in any evacuation route must be maintained for the period of time occupants take to evacuate the part of the building so that-
  (i) The temperature will not endanger human life. and
  (ii) The level of visibility will enable the evacuation route to be determined. and
  (iii) The level of toxicity will not endanger human life

(b) The period of time occupants take to evacuate referred to in (a) must be appropriate to-
- (i) The number. mobility and other characteristics of the building, and
- (ii) The function or use of the building, and
- (iii) The travel distance and other characteristics of the building. and
- (iv) The fire load. and
- (v) The potential fire intensity, and
- (vi) The fire hazard. and
- (vii) Any active fire safety systems installed in the building. and
- (viii) Fire brigade intervention

One method of meeting this is by the DtS Provisions Clause E2 2 of the BCA An Alternative Solution is proposed that will meet the relevant Performance Requirement (EP2 2) in relation to smoke hazard management Sub-system A will be used to define the design fire in the enclosure of fire origin Sub-system B will be used to analyse smoke spread within enclosures and thus time to the onset of untenable conditions (Available Safe Egress Time – ASET) Sub-system D will be used to analyse fire detection and occupant warning and Sub-system E will be used to analyse the evacuation of occupants (Required Safe Egress Time – RSET)

DtS Clause E2 2 and Table E2 2b (NSW) of the BCA requires a Class 6 building with a fire compartment exceeding 2000m² to be provided with an automatic smoke exhaust system or automatic smoke and heat vents

Potential fire scenarios have been determined based on the construction and layout of the areas, normally expected fuel loads within the areas and potential ignition sources Design fires modelled are those considered to be most likely, credible worst case scenarios Assessment of arson fire ignition has NOT been considered in these analyses

Untenable conditions are considered to occur when the smoke layer reaches 2 1m above the floor (a conservative estimate of height for the majority of occupants) This determines the ASET Below this level, the smoke is considered to obscure the occupants' vision and to be breathed in by the occupant Visibility and toxicity of the smoke layer have not been considered, as egress is assessed to gave been completed by occupants from the area of fire before the smoke reaches the head height of occupants

Occupant evacuation is made up of movement and pre-movement time Movement time is based on the number of occupants in the area and calculation of egress through the area to outside This will be added to the pre-movement time of detection. response time and delay time Together this provides the RSET

Fire and egress modelling has indicated that on a conservative assessment occupants are able to egress from Dan Murphy's liquor store and Woolworth's supermarket with a suitable safety margin before conditions become untenable

The entire Building is to be protected by a sprinkler system comply with Specification E1 5 of the BCA Specification E1 5 of the BCA (fire sprinkler systems) requires the sprinkler system to comply with AS 2118 (1982) and details water requirements It also requires a building occupant system that complies with Clause 6 of Specification E2 2a of the BCA to sound throughout In the Dan Murphy's liquor store, a smoke detection system installed to AS 1670 1 (2004) will provide early warning to occupants and promptly initiate egress

With regards to the proposed sprinkler system and fire detection and occupant warning system, fire and egress modelling has indicated that occupants can egress the Building before conditions become untenable

In respect to the above comments and explanations provided in Appendix E Table 3. it is considered that the Performance Requirements of EP2 2 are satisfied in an alternative manner

15 DEEMED TO SATISFY COMPLIANT REQUIREMENTS.

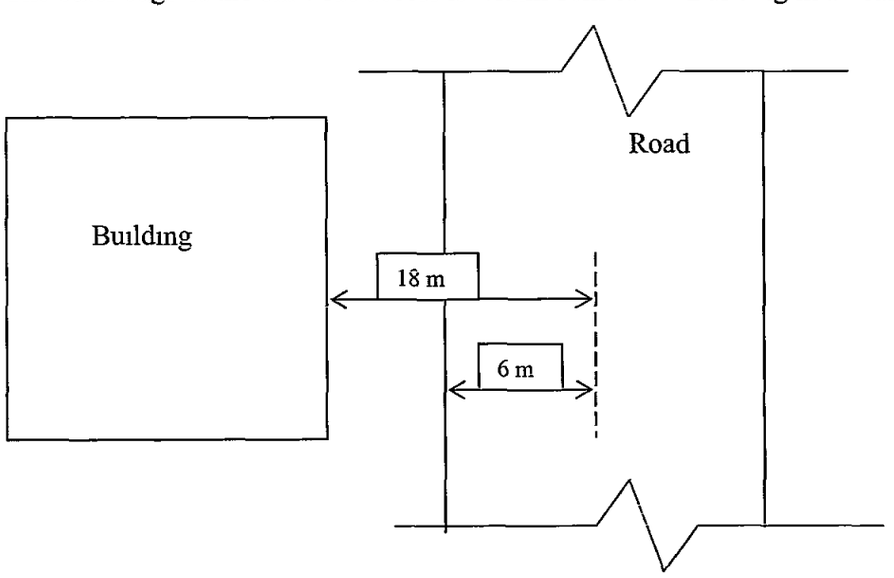
15 1 Large Isolated Building Vehicle Requirements

Performance Requirement CP9 of Section C (Fire Resistance) of the BCA requires that access must be provided to and around a building for fire brigade vehicles and personnel to facilitate fire brigade intervention One method of meeting this is by the DtS Provisions Clauses C2 3 and C2 4 of the BCA Sub-system F will be addressed

Access is provided around the site by four public roads that have an adequate load bearing capacity and unobstructed height to permit the operation of Fire Brigade vehicles Pedestrian access is available from the roads to the Building

Waratah. Keenan and Park Streets are all two-way main roads that are greater than 6m wide Akuna Lane is a one-way road (Southwest to Northeast) that has a roadway approximately 5m wide Part (ii) of C2 4(b) requires the vehicular access not to be used for any other purpose than vehicular or pedestrian movement Thus when Akuna Lane footpaths (public open space) are included. the access is greater than 6m in width

The outer edge of the 6m wide access is within 18m of the Building in all cases



It is considered that this assessment and explanations provided in Appendix E Table 1 will satisfy Clause C2 3 and C2 4 and the Performance Requirements of CP9

15 2 Distance Between Exits

Performance Requirement DP4 of Section D (Access and Egress) of the BCA states that exits must be provided from a building to allow occupants to evacuate safely. with their number, location and dimensions being appropriate to-

(a) The travel distance, and

(b) The number, mobility and other characteristics of occupants. and
(c) The function or use of the building. and
(d) The height of the building. and
(e) Whether the exit is from above or below ground

One method of meeting this is by the DtS Provisions Clause D1 5 of the BCA Sub-system E will be used to analyse the evacuation of occupants DtS Clause D1 5 of the BCA states that exits that are required as alternative means of egress must be distributed as evenly as possible and must be not less than 9m or more than 60m apart

Based on the Basement carpark plan revision 1 (February 2005). there is adequate egress from the area by exit doors and stairs that are located less than 60m apart

It is considered that this assessment and explanations provided in Appendix E Table 2 will satisfy DtS Clause D1 5 and the Performance Requirements of DP4

15 3 Fire Hydrants. Fire Hose Reels and Portable Fire Extinguishers
The existing fire hydrant system to provide the flow and pressure requirements of AS 2419 (1980) for the entire Building

Clause E1 4 of the BCA requires fire hose reels to serve the Building and be installed in accordance with AS 2441 (1983) Clause E1 4 of the BCA requires portable fire extinguishers to be provided to emergency services switchboards and to comply with AS 2444 (2001) requirements

15 4 Sprinkler Installation
Automatic fire sprinkler systems are to be retained in the existing areas of the Building and to be installed throughout the proposed areas of the Building in accordance with the requirements for hazard classification of AS 2118 (1982)

15 5 Installation of Fire Detection and Occupant Warning System
Proposed fire detection and occupant warning systems to comply with the requirements of the AS 1670 1 (2004) to be installed in Dan Murphy's liquor store

15 6 Emergency Lighting, Illuminated Exit Signs and Direction Signs
Proposed exit and emergency lighting to provide complying emergency levels of light and clear indication of exit direction

Exit signs to be clearly visible to people approaching or seeking the exit They must be installed on, above. or adjacent to each door providing direct egress from a storey to an enclosed stairway serving as a required exit, each door from an enclosed stairway at level of discharge to a road or open space and to each door serving as, or forming part of a required exit in a storey required to be provided with emergency lighting If the exit is not readily apparent then exit signs with directional arrows must be installed in appropriate positions indicating direction to a required exit

16 FIRE SAFETY WORKS.

As stated earlier in this report it has been noted that the building is required to meet applicable performance requirements of Part C, D and E of the BCA To comply with these requirements. it is proposed to

- Retain existing sprinkler system and extend to proposed new retail areas. to comply with AS 2118 (1982). BCA Specification E1 5 and BCA Specification 2 2a. Clause 6 (Building Occupant Warning System).
- Retain existing fire hydrant system and extend to proposed areas. to comply with AS 2419 1 (1980).
- Retain existing portable fire extinguishers and hose reels and extend to proposed areas. to comply with AS 2444 (2001) and AS 2441 (1983),
- Retain existing emergency lighting, illuminated exit signs and directional signage and extend to proposed areas, to comply with AS 2293 1 (1983),
- Install warning system throughout Dan Murphy's liquor store to AS 1670 1 (2004) and BCA Specification 2 2a. Clause 6 (Building Occupant Warning System),
- Check the operation of existing systems (occupant warning. emergency lighting. exit signs. directional signs. fire hydrant system. portable fire extinguishers. hose reels, sprinkler system) and confirm their adequacy for the site

In addition to these non-compliances it is recommended that the following additional elements also be included

1) Design and implement an Emergency plan for the Building in accordance with AS 3745 (this requirement to include initial training of emergency wardens and regular testing of the plan by carrying out of emergency drills that include all staff) Formal Emergency Planning be undertaken and maintained as a part of the Essential Systems of the Building and Certified with an Annual Fire Safety Statement issued annually by a Suitably Qualified Person
2) Initiate a formal regime of regular servicing and maintenance of all essential services installed on the site This regime to include the Emergency plan and evacuation exercises
3) Prepare logbooks to support the recording of regular servicing for all essential services installed on the site This logbook system is intended to simplify the annual re-certification of the essential services as required by council
4) Final Fire Safety Certificates shall be issued at the completion of construction in accordance with the requirements of Clauses 168. 170-172 & 174 and Annual Fire Safety Statements shall be provided at the completion of the defects liability period. but no later than 12 months after issue of the Final Fire Safety Certificates. in accordance with Clauses 175-181 of the NSW Environmental Planning & Assessment Regulations 2000

It is considered that the provision of the above services will allow for adequate Fire Brigade intervention as well as occupant egress and will satisfy the requirements of the BCA

17 SCHEDULE OF ESSENTIAL FIRE SAFETY MEASURES.

The items and systems listed in the following table (Table 23 1) are those which are part of the alternative design solutions and performance based assessment of this Building They are considered to be essential to the continued maintaining of the levels of Fire Safety for occupants of the Building As such, the listed measures will be included in a Schedule of Essential Fire Safety Measures

Items and systems listed in the Schedule will be required to be certified as fit for purpose on completion of design and installation and thereafter re-certified annually as being serviced and maintained in accordance with the level of design and operational readiness that was originally installed Systems listed in the Schedule shall be designed and installed to the stated standard in the Design Standard column of the Schedule and serviced and maintained to the standard stated in the Design Operating Level column of the Schedule

Final Fire Safety Certificates shall be issued at the completion of construction in accordance with the requirements of Clauses 168. 170-172 & 174 and Annual Fire Safety Statements shall be provided at the completion of the defects liability period, but no later than 12 months after issue of the Final Fire Safety Certificates, in accordance with Clauses 175-178 & 181 of the NSW Environmental Planning & Assessment Regulations 2000

The following is a list of "Essential Services" that will be required to be regularly services and maintained by competent servicing contractor/s in accordance with their associated Australian (or other specified) Standard

At the end of each 12 month period the competent servicing contractor, through the Owner is required to carry out performance testing of the systems listed and provide the owner with a certificate that attests that each system is operating in accordance with the standard of design and installation that the system was originally installed Certificates should include all information required by Clause 174-181 of the EP&A Regulation

Table 17 1 - Schedule of Essential Fire Safety Measures for Dan Murphy's Liquor Store

System	Design Standard	Design Operating Level	Servicing Standard
Fire Detection & Alarm	AS 1670 1 (2004)	AS 1670 1 (2004)	AS 1851 8 (1987)
Sprinkler System	AS 2118 (1982)	AS 2118 (1982)	AS 1851 3 (1985)
Occupant Warning	BCA Spec E2 2a Clause 6 & AS 1670 1 (2004)	BCA Spec E2 2a Clause 6 & AS 1670 1 (2004)	AS 1851 8 (1987)
Exit Signs & Emergency Lighting	AS 2293 1 (1983)	AS 2293 1 (1983)	AS 2293 1 (1983)
Fire Hydrants	AS 2419 (1980)	AS 2419 (1980)	AS 1851 4 (1980)
Fire Hose Reels	AS 2441 (1983)	AS 2441 (1983)	AS 2441 (1983)
Portable Fire Extinguishers	AS 2444 (2001)	AS 2444 (2001)	AS 1851 1 (1995)
Emergency Plan & Training	AS 3745 (2002)	AS 3745 (2002)	AS 3745 (2002)

18 CONCLUSIONS.

The redevelopment of an existing Building has been assessed against the performance requirements of the BCA to determine compliance with the code An Alternative Solution has been provided to the DtS non-compliance of smoke hazard management

Fire Engineering modelling has shown that occupants are able to evacuate the Building before conditions become untenable

The assessment shows that the proposed Building. together with the proposed upgrading/fire safety works. will comply with the BCA requirements and. in the event of fire. provide suitable provisions to allow safe evacuation of the building and the intervention of the NSW Fire Brigade

Fire hose reels, fire extinguishers. sprinklers, smoke detection and alarm system. emergency lighting and exit signage is required to be installed in accordance with the applicable Standards and DtS requirements

The upgrading of systems and provision of essential services. as shown above, is assessed as providing satisfactory means of meeting the BCA performance requirements CP9. DP4 and EP2 2

Note that any future proposal to connect the Liquor Store to the Supermarket will require further assessment

FIRE ENGINEER'S STATEMENT.

The above Fire Engineering Analysis is based on the fire engineering methodologies. practices and assessment methods that are acceptable at the time of preparation of this report The assessment methods used in the preparation of this report are those published in the Building Code of Australia (BCA) and Fire Safety Engineering Guidelines that were in force or use at the time of assessment

Analysis is based on information gathered during review of drawings and/or design concepts. and site inspections, along with information provided by the Client and others This information is assumed to be correct for the purposes of reaching an informed assessment outcome Outcomes, conclusions, and determinations reached in this report are provided on the basis of information available at the time of preparation of the report and its correctness

Levels of fire safety assessed and concluded in this report assumes that all information provided is correct and that details. materials. finishes. and building design actually constructed have not altered from that assessed

Alternative solutions are based on the systems, procedures, and all other parameters and measures being implemented in the building during its construction and being carried through in its use for the remainder of the life of the building

The above engineering alternate solutions are contingent on the requirement for professional and adequate design of systems. competent installation. and effective interfacing along with full commissioning and the implementation of a formal regime of regular servicing. maintenance and certification of systems for the life of the building Any management systems required are also subject to the foregoing requirements

Fire engineered alternative solutions evolved in this report are based on a suite of parameters and measures that are required to be installed in the subject building. perform in concert with other parameters or requirements. and to minimum Standards so as to provide the levels of fire safety expected from the engineering assessments Engineered Fire & Safety Solutions Pty Ltd denies liability of any type that is the result of change of design. ad hoc departures from. or non-adherence to any of the requirements. parameters, Standards or servicing, maintenance and certification that form part of the suite of parameters and measures that form the engineered solution

The works referred to in this report are those which. in the professional opinion of the reporting engineer, are required to meet the requirements of the relevant Performance Requirements of the Building Code of Australia (BCA) for building and/or upgrading works It should however be noted that the Local Government Council having jurisdiction over the premises may, within their statutory powers, require different. additional or alternative works to be carried out to those referred

The Reporting Engineer denies any legal liability for action taken as a consequence of the following
a) Local Government Council. Principal Certifying Authority or other Authority requiring the installation of alternative or additional inclusions to those proposed or recommended in this Report
b) Incorrect information, or mis-information. provided by the Client with regard the building or existing elements. finishes or inclusions which. are in good faith. included in the strategies proposed in this Report and later found to be false

Report prepared by Don Alexander
M App Sc (Fire Safety Design) B Teach C Eng F I Fire E

Date 8th August 2005

APPENDIX A – REFERENCES

[1] *Fire Safety Engineering Guidelines* Fire Code Reform Centre Ltd, Sydney, Australia. 2001

[2] *The Fire Protection Handbook* Ed A E Cote, National Fire Protection Association, Quincy, USA. 1997

[3] *The SFPE Handbook of Fire Protection Engineering* Society of Fire Protection Engineers, Quincy, USA. 1995

[4] *Fire Engineering Guidelines* Fire Code Reform Centre Ltd. Sydney, Australia. 1996

[5] *Fire Engineering Design Guide. 2rd Edition* Ed A H Buchanan, University of Canterbury. New Zealand, 2001

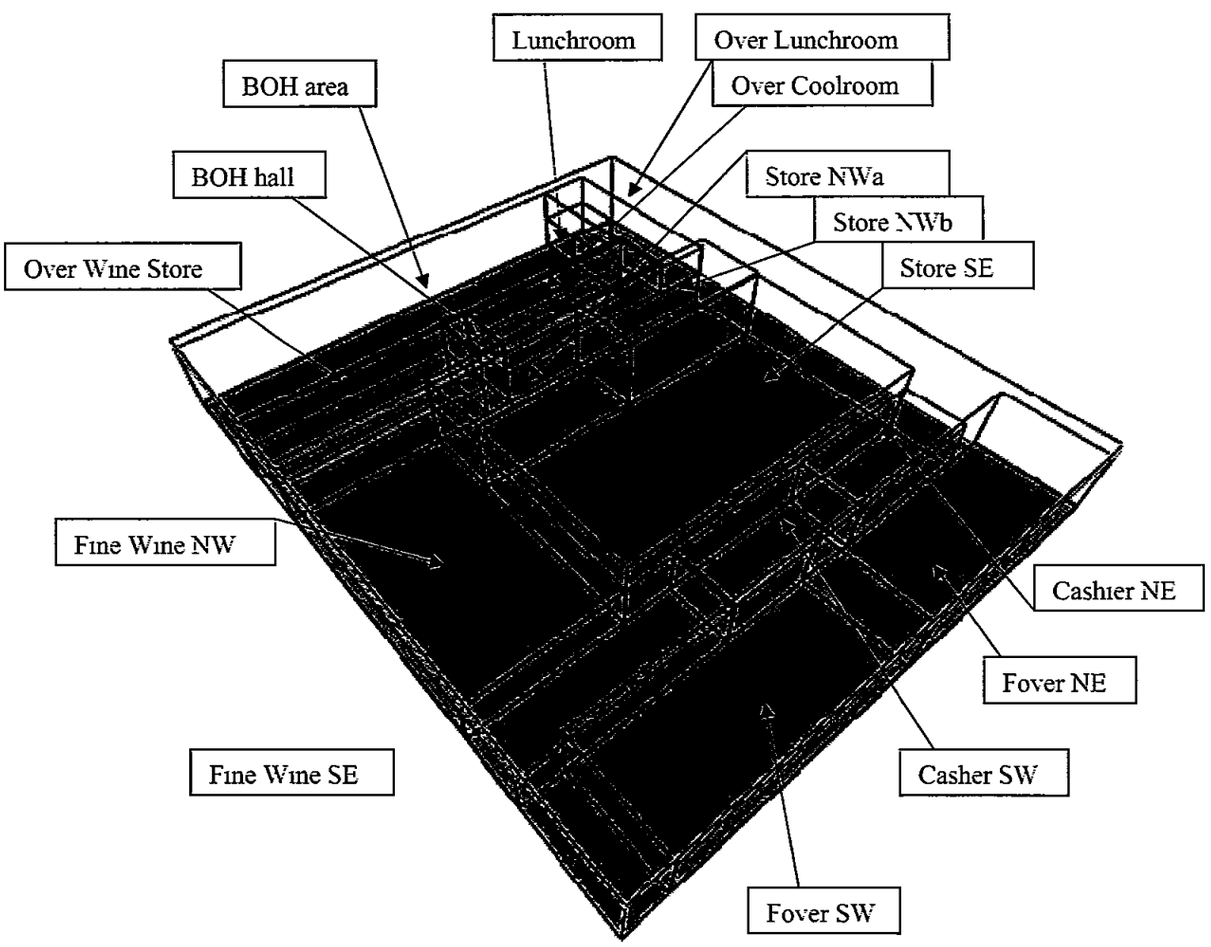
[6] *Evaluation of Complex Fire Models* R D Peacock, P A Reneke, W W Jones. Building & Fire Research Laboratory. National Institute of Standards and Technology. Gaithersburg. USA, 1997

[7] *A User's Guide for FAST Engineering Tools for Estimating Fire Growth and Smoke Transport* US Department of Commerce, National Institute of Standards and Technology, Gaithersburg, USA, 1997

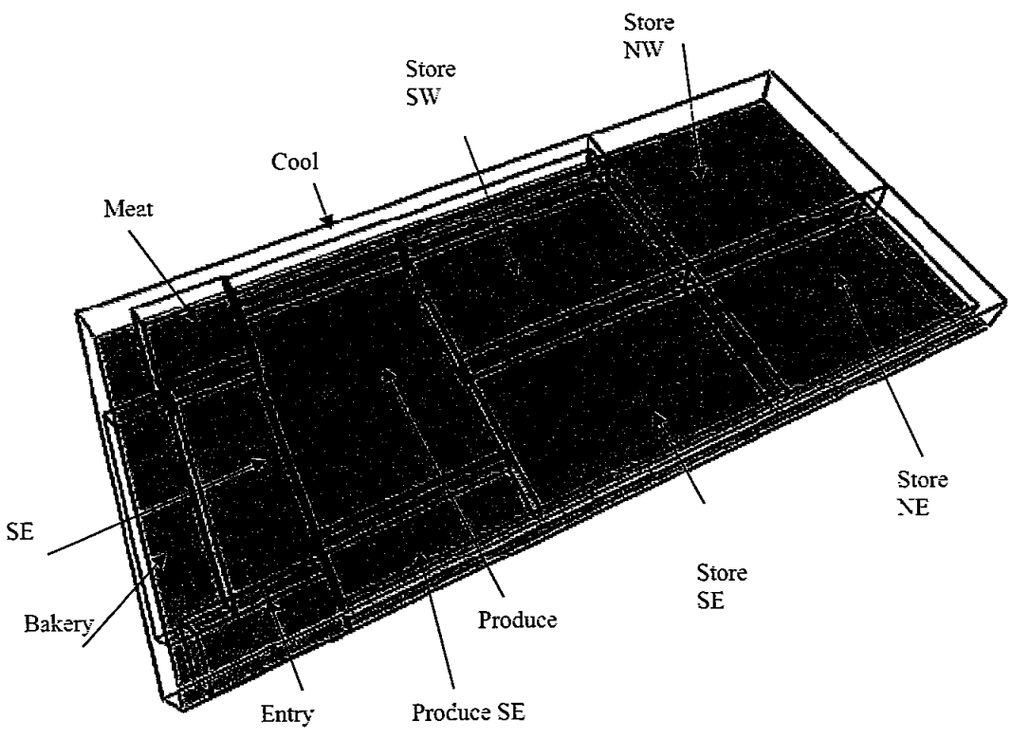
[8] *Technical Reference Guide for the Hazard I Fire Hazard Assessment Method, version 1 1* Building & Fire Research Laboratory. National Institute of Standards and Technology. Washington, USA, 1991

APPENDIX B – MODELLING SPACES SKETCH

Dan Murphy's Liquor Store



Woolworths Supermarket



APPENDIX C – SCENARIOS FOR FIRE MODELLING

Dan Murphy's Liquor Store

Scenario	Location of Fire	BOH Door	Fire Growth	Sprinkler Activation	Peak Heat Release
Dan_1	BOH area	Closed	Fast t^2	200 s	1 9 MW
Dan_2	Lunchroom	Closed	Fast t^2	160 s	1 2 MW
Dan_3	Fine wine retail NW	Closed	Fast t^2	170 s	2 3 MW
Dan_4	Northwesta retail	Closed	Fast t^2	220 s	2 1 MW
Dan_5	Southeast retail	Closed	Fast t^2	210 s	1 5 MW
Dan_6	Cashier	Closed	Fast t^2	180 s	1 2 MW
Dan_7	Glazed foyer	Closed	Fast t^2	230 s	2 5 MW
Dan_8	Lunchroom	Open	Fast t^2	160 s	1 2 MW
Dan_9	Fine wine retail NW	Open	Fast t^2	170 s	2 3 MW
Dan_10	Northwesta retail	Open	Fast t^2	220 s	2 1 MW
Dan_11	Cashier	Open	Fast t^2	180 s	1 2 MW
Sensitivity					
Dan_a	BOH area	Closed	Ultra-Fast t^2	99 s	1 9 MW
Dan_b	Fine wine retail NW	Closed	Ultra-Fast t^2	110 s	2 3 MW
Dan_c	Northwesta retail	Closed	Ultra-Fast t^2	130 s	3 2 MW
Dan_d	Cashier	Open	Ultra-Fast t^2	120 s	2 7 MW
Dan_e	BOH area	Closed	Medium t^2	250 s	0 8 MW
Dan_f	Fine wine retail NW	Closed	Medium t^2	280 s	0 9 MW
Dan_g	Northwesta retail	Closed	Medium t^2	360 s	1 5 MW
Dan_h	Cashier	Open	Medium t^2	330 s	1 3 MW
Dan_I	BOH area	Closed	Fast t^2	230 s	2 5 MW
Dan_j	Fine wine retail NW	Closed	Fast t^2	260 s	3 2 MW
Dan_k	Northwesta retail	Closed	Fast t^2	320 s	4 8 MW
Dan_l	Cashier	Open	Fast t^2	300 s	4 2 MW

Woolworths Supermarket

Scenario	Location of Fire	Fire Growth	Sprinkler Activation	Peak Heat Release
Wool_1	Entry	Fast t^2	180 s	1 5 MW
Wool_2	Produce area	Fast t^2	180 s	1 5 MW
Wool_3	Southwest store	Fast t^2	190 s	1 7 MW
Wool_4	Northeast store	Fast t^2	190 s	1 7 MW
Wool_5	Bakery	Fast t^2	160 s	1 2 MW
Wool_a	Produce area	Ultra-Fast t^2	110 s	2 3 MW
Wool_b	Bakery	Ultra-Fast t^2	100 s	1 9 MW
Wool_c	Produce area	Medium t^2	290 s	1 0 MW
Wool_d	Bakery	Medium t^2	260 s	0 8 MW
Wool_e	Produce area	Fast t^2	260 s	3 2 MW
Wool_f	Bakery	Fast t^2	240 s	2 7 MW

APPENDIX D – FIRE MODELLING INPUT DATA AND RESULTS

```
VERSN  5 DAN MURPHYS
TIMES  1810    30    10    20
TAMB  293 150      101300  0 000000
EAMB  293 150      101300  0 000000
ADUMP dan3 csv IN

HIF      0 000   0 00   0 000 2 600  2 700  2 700  0 0000 0 000 0 000  0 000   0 0000 0 000  0 000  0 0000  0 000
WIDTH  32 800  2 000  4 300  4 300  15 60  15 20  11 30  12 90  12 90  25 80   15 10  11 00  11 00  18 80  18 80
DEPTH  10 00   4 900  4 000  14 90  4 900  4 900  20 00  5 900  5 900  14 10   4 800  4 000  4 800  7 800  7 800
HEIGH  4 900   5 300  2 600  2 300  2 400  2 500  3 300  5 600  5 600  5 400   3 300  3 700  3 700  4 600  4 600
CYABS  37 50   32 60  43 50  32 60  32 60  32 60  12 60  26 70  26 00  12 600  7 800  7 800  7 800  0 000  0 000
CXABS  0 000  15 60  32 80  32 80  0 000  17 60   0 00   11 30  24 20  11 300  0 000  15 10  26 10  3 00   21 80

CEILI STEELSHT STEELSHT  GYPSUM  STEELSHT STEELSHT STEELSHT GYPSUM  STEELSHT STEELSHT
STEELSHT GYPSUM  GYPSUM  GYPSUM  GYPSUM  GYPSUM
WALLS CONCRETE CONCRETE  CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE
CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE
FLOOR CONCRETE CONCRETE  CONCRETE GYPSUM  GYPSUM  GYPSUM  CONCRETE CONCRETE
CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE

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HVENT  1  4  1  10 0000  4 90000 2 600000 0 000000 0 000000 4 900000  2
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VVENT 14 16  40 5000  2
VVENT 15 16  33 0000  2

CHEMI  16 0000  50 0000  10 0000 1 9500E-007  293 150  493 150 0 300000
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LFBT 2
CJET ALL
FPOS 5 00000 10 00000 0 000000
FTIME     51 0000     102 000     153 000     170 000     255 000     306 000     357 000     408 000     465 000
1810 00     1861 00     1912 00     1963 00     2014 00     2065 00     2116 00     2167 00     2218 00     2275 00
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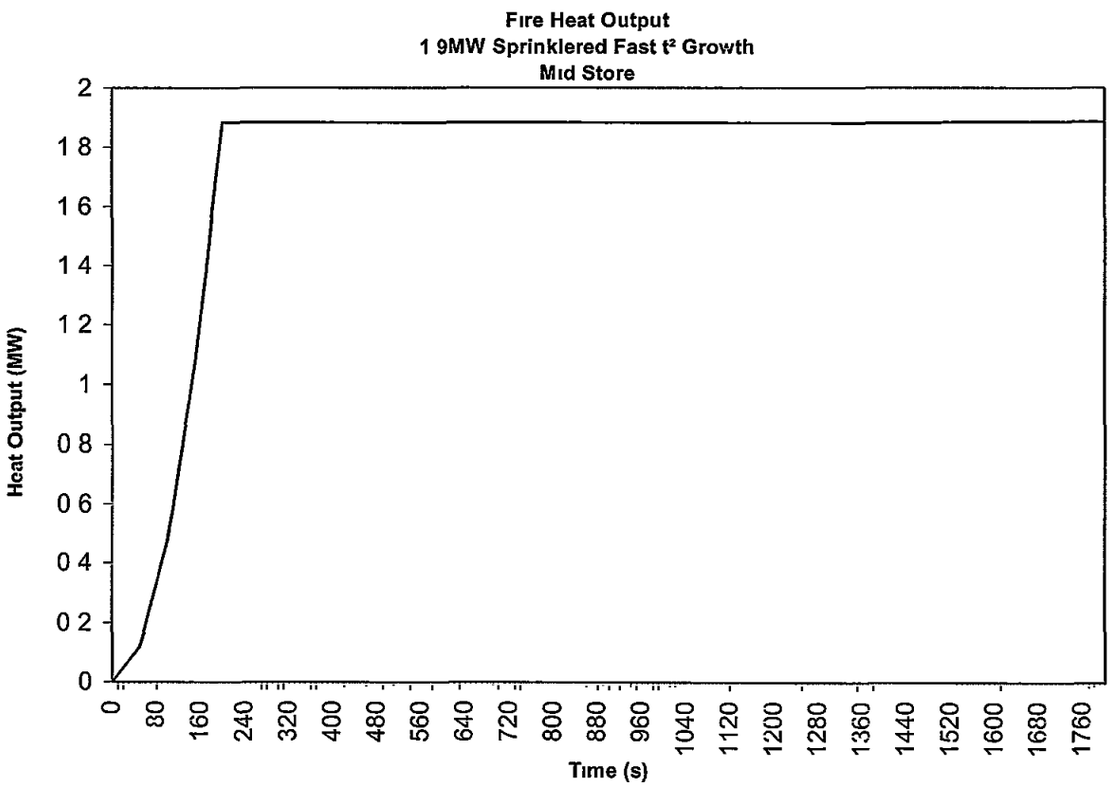
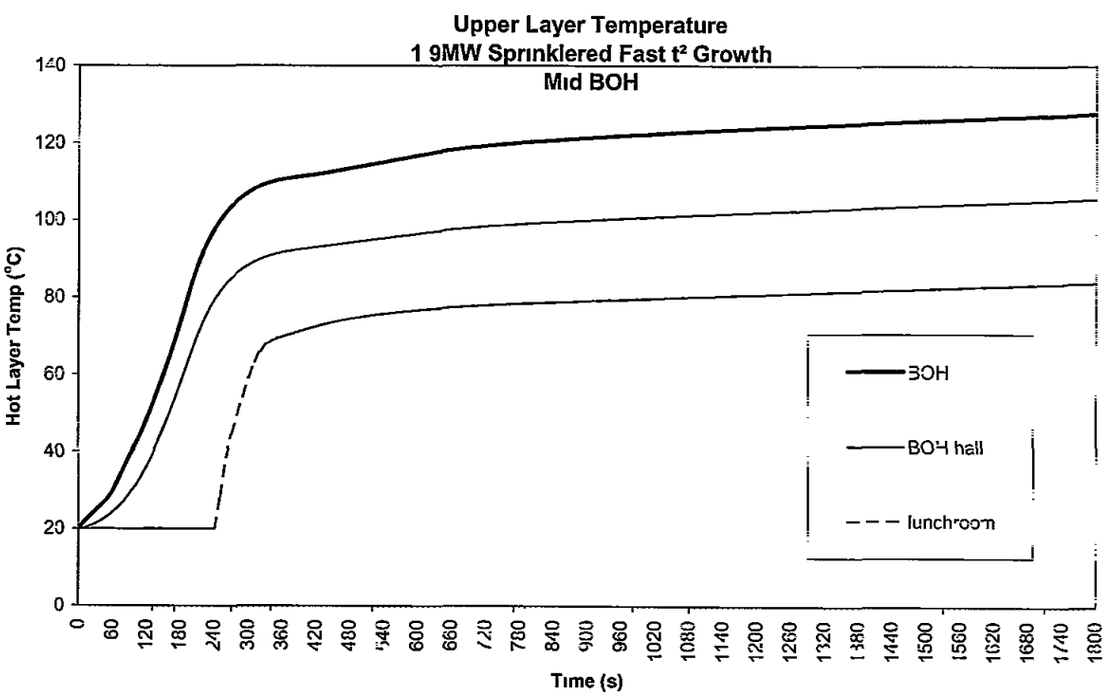
Scenario Dan_1





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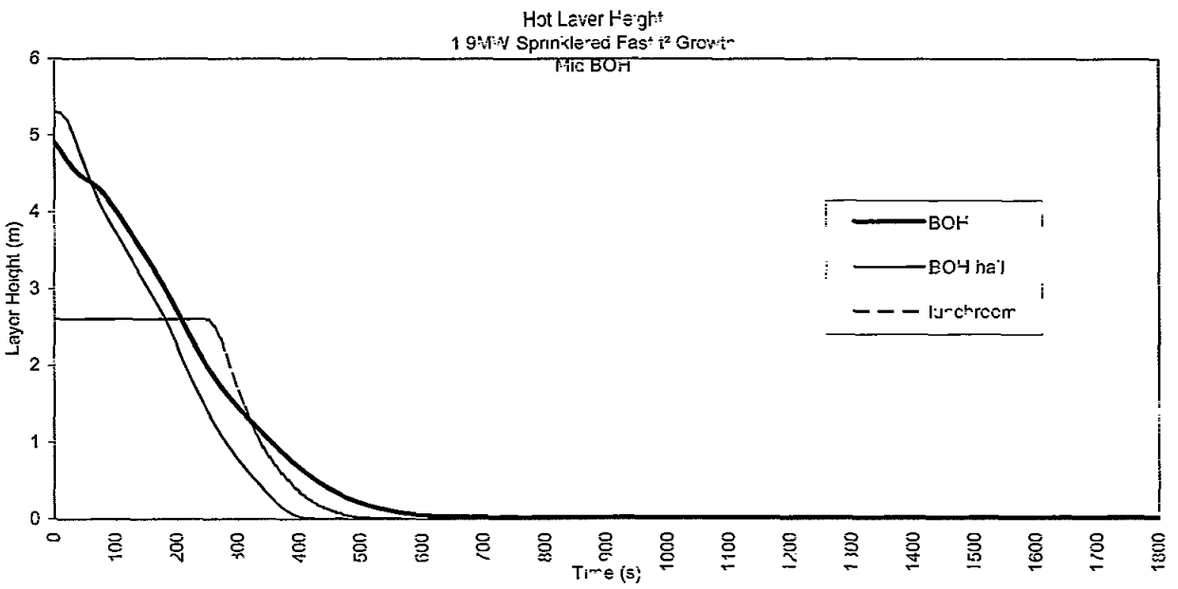
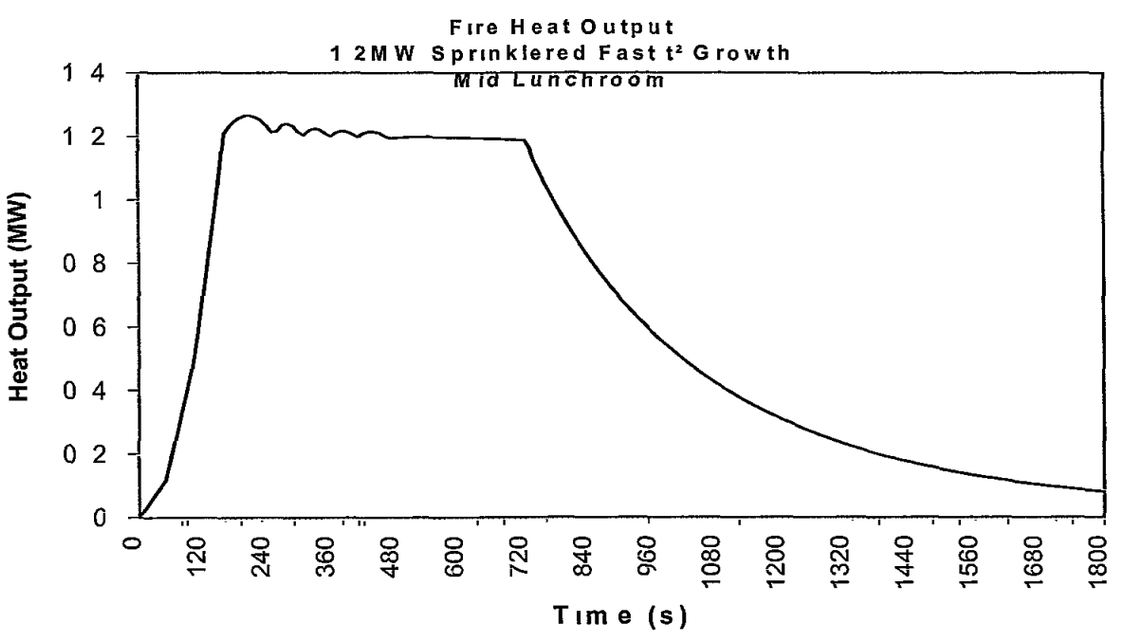


Scenario Dan_2



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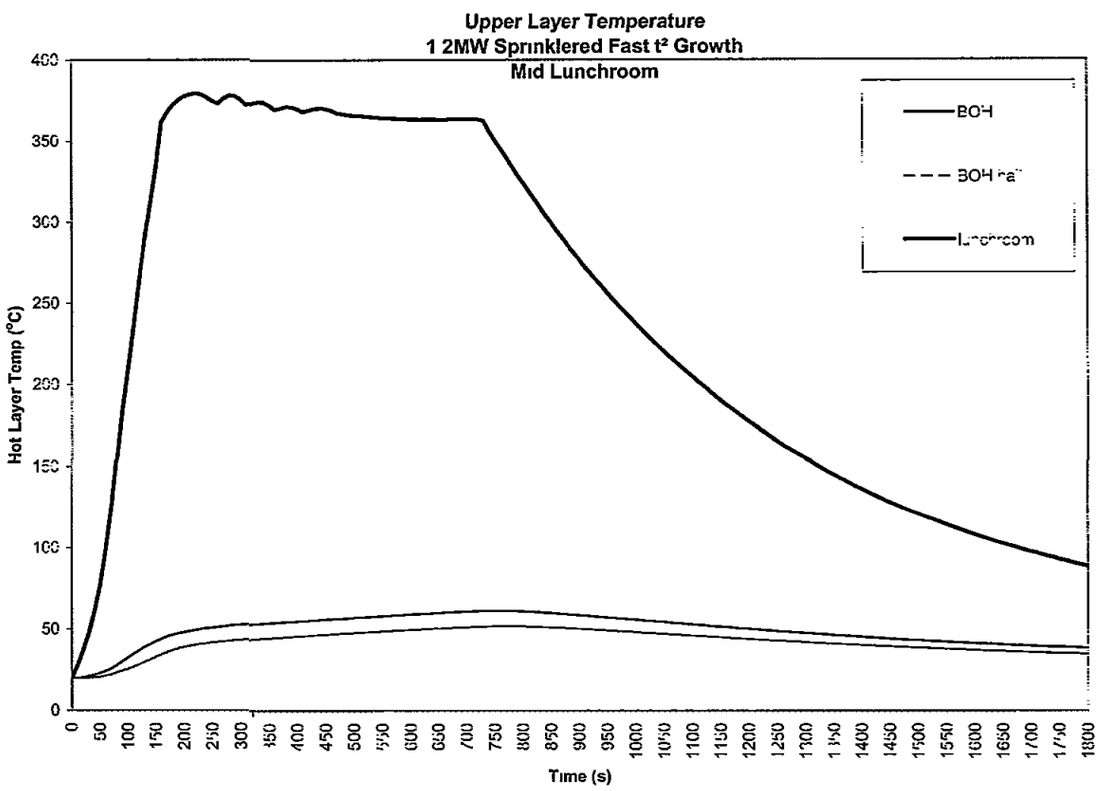
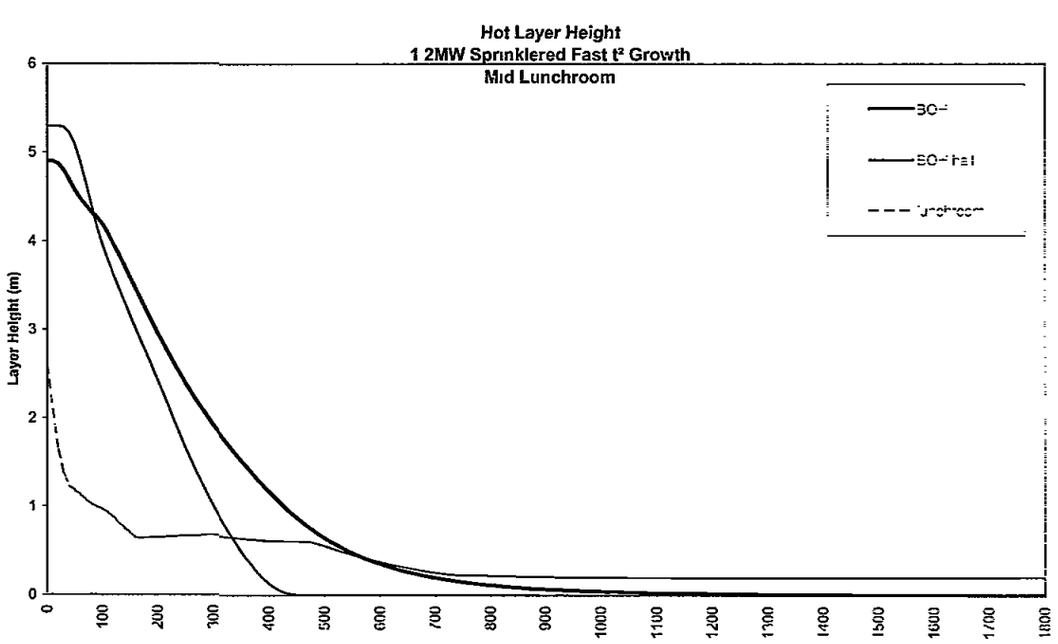
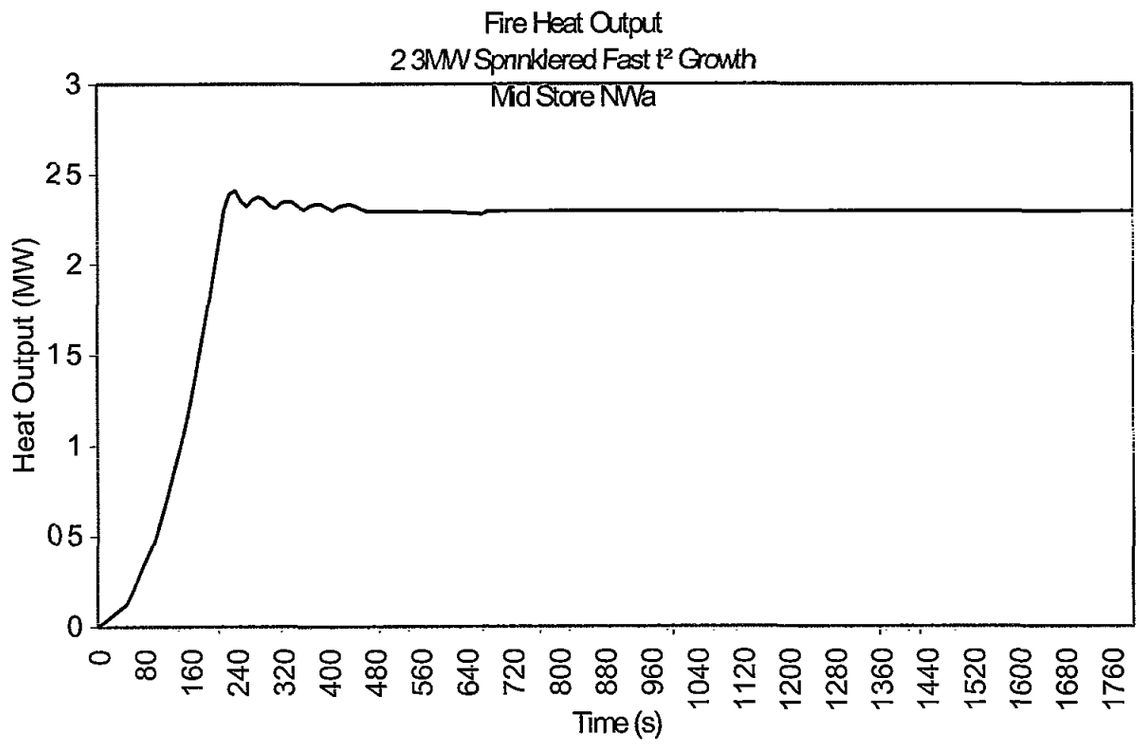
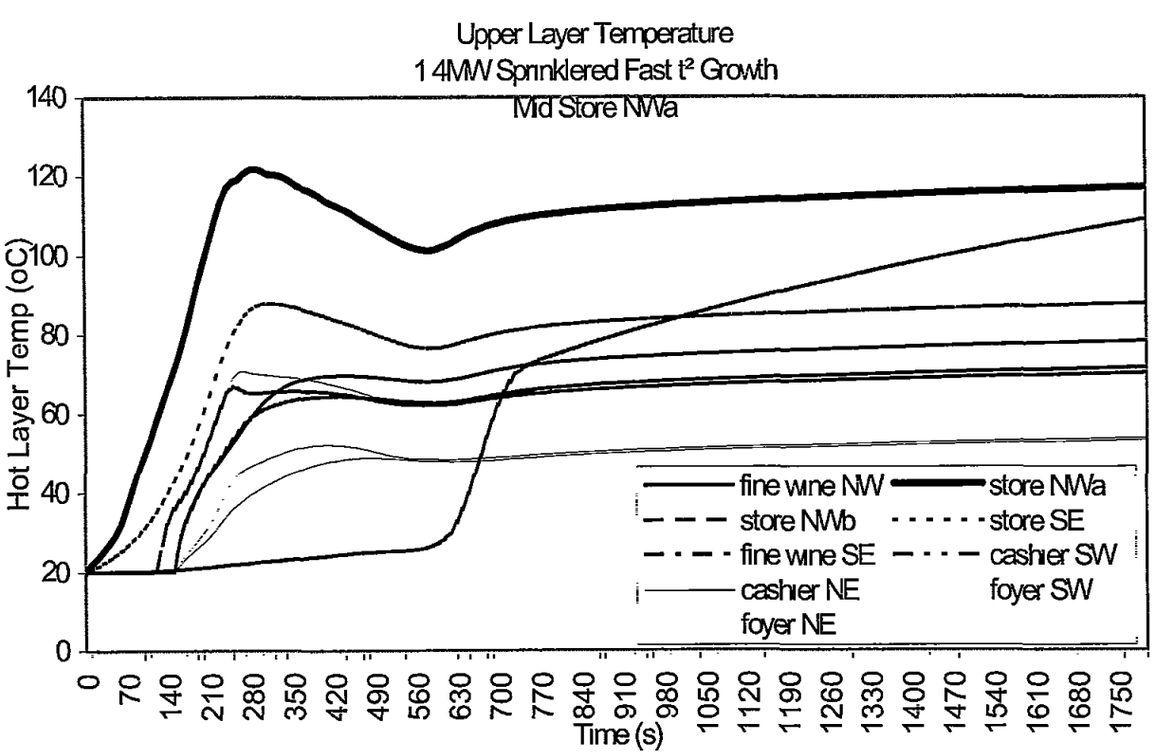




Scenario Dan_4





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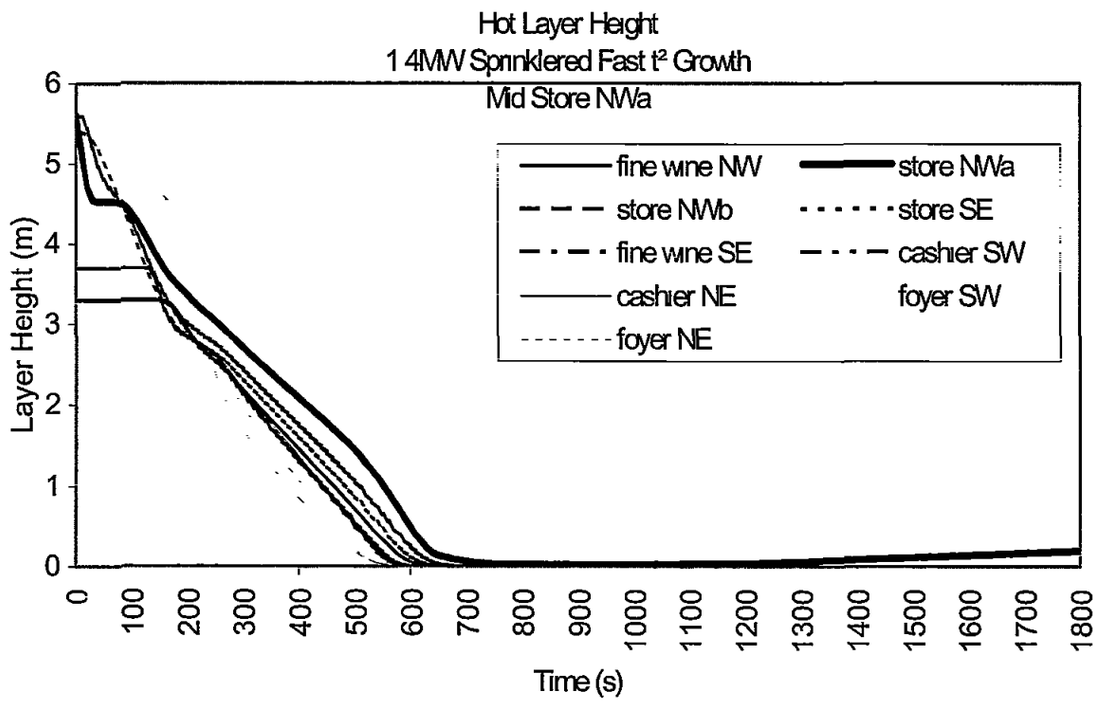

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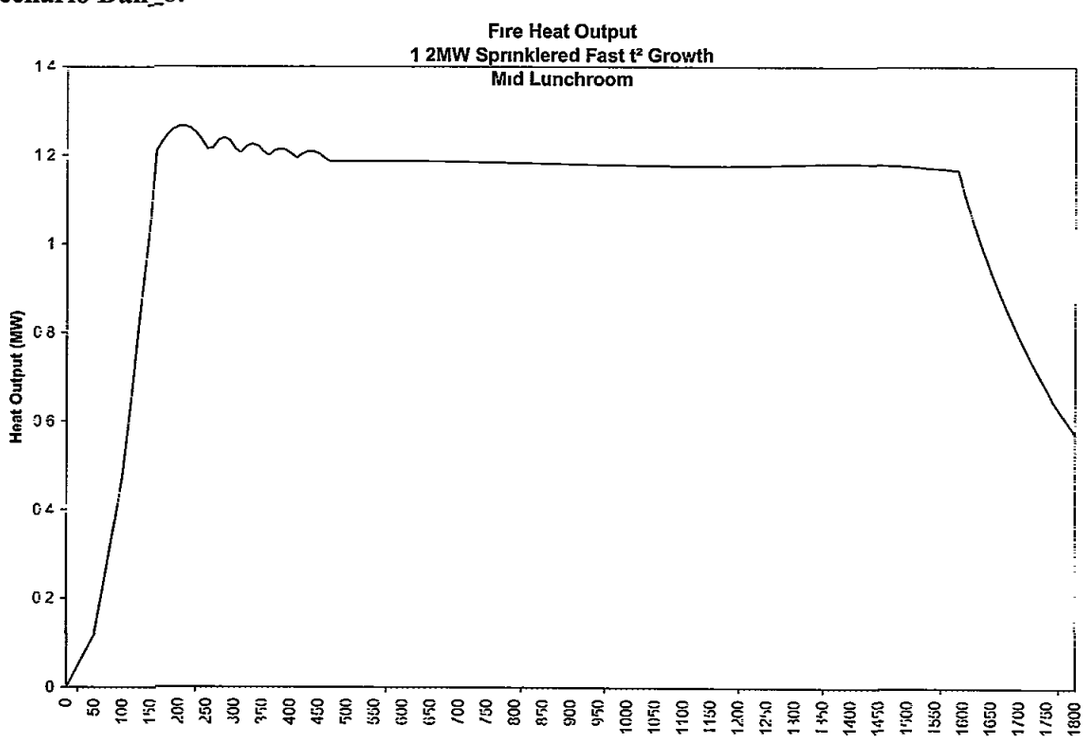

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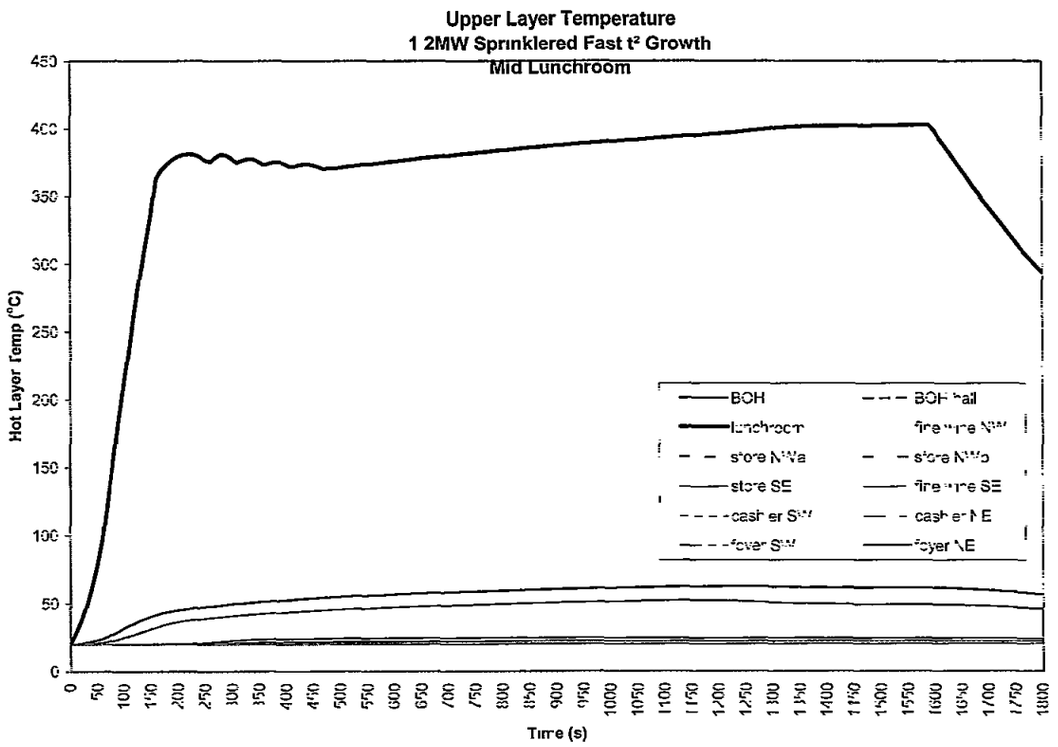

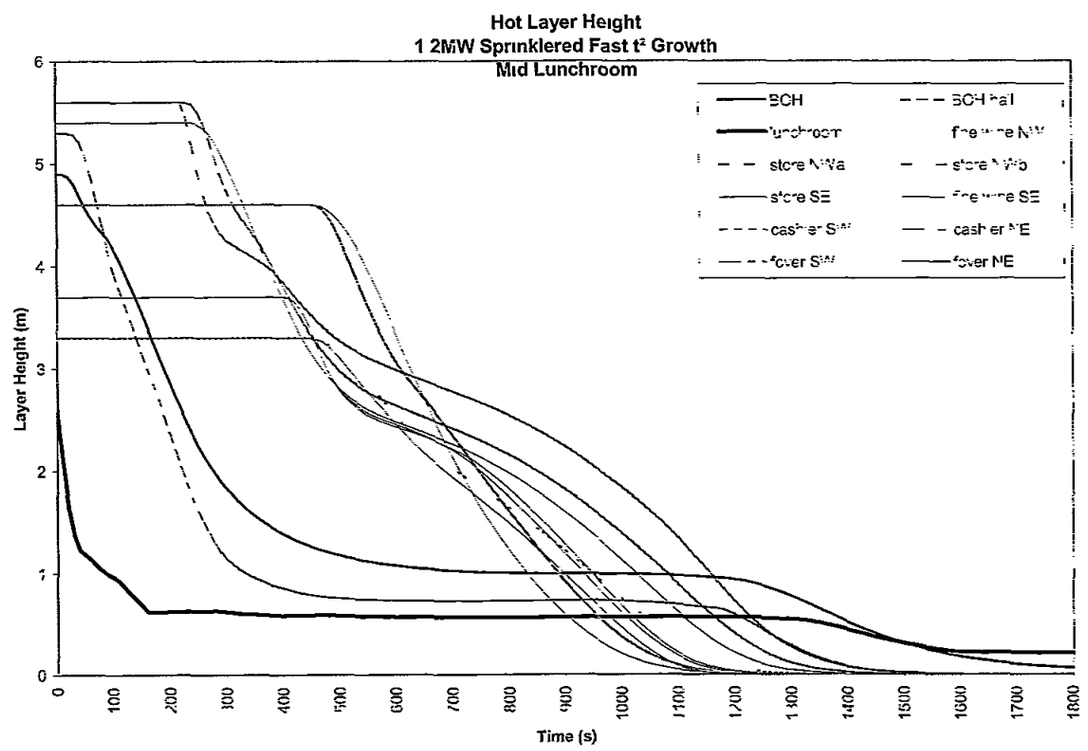

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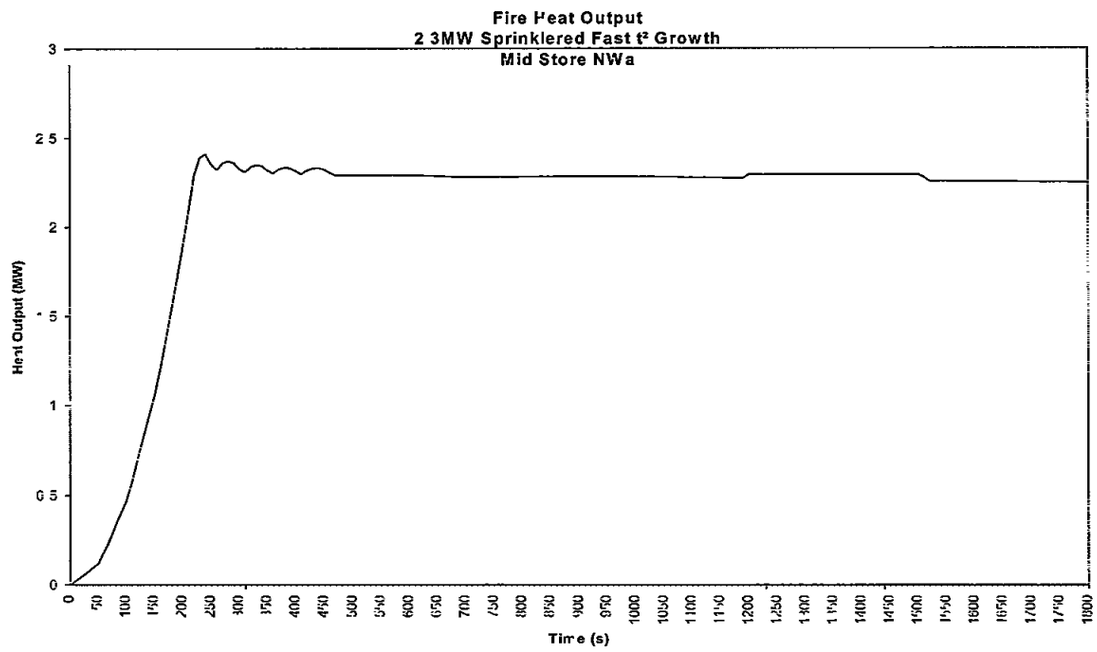

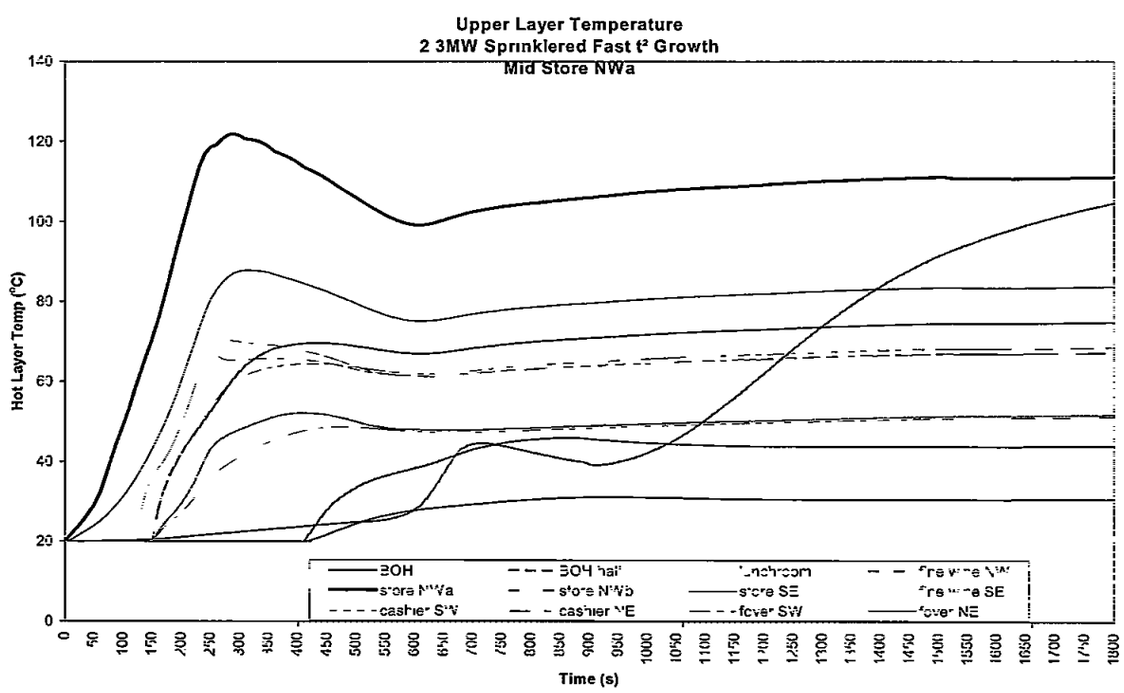

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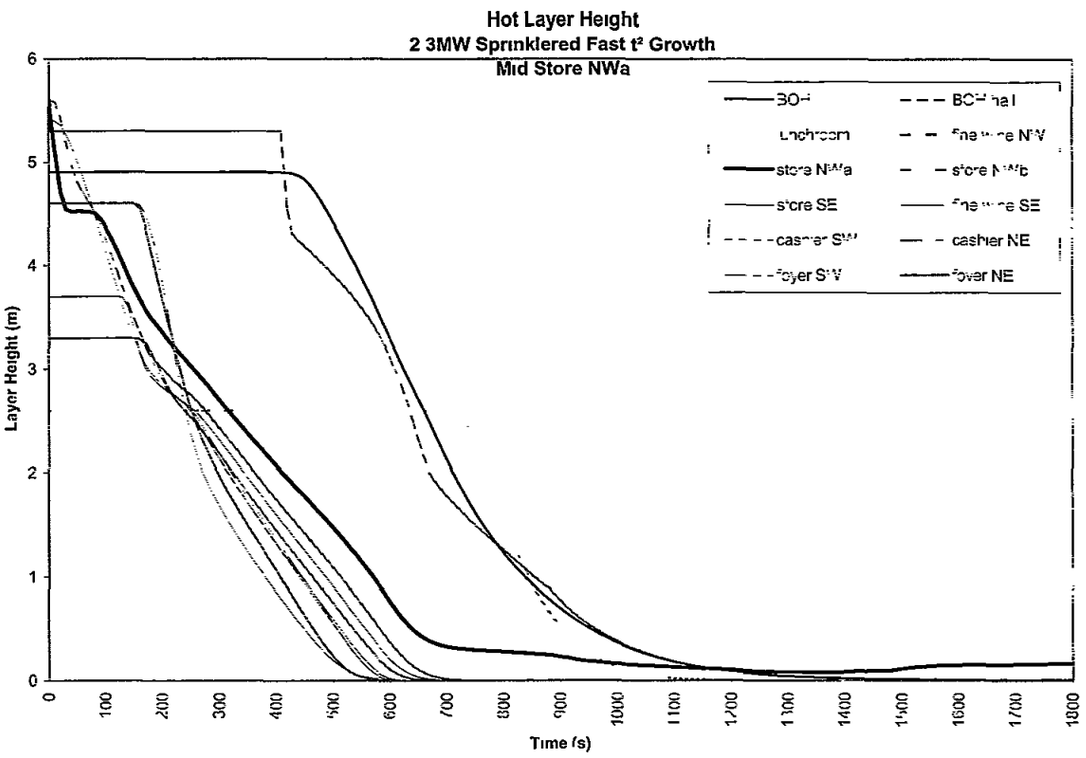

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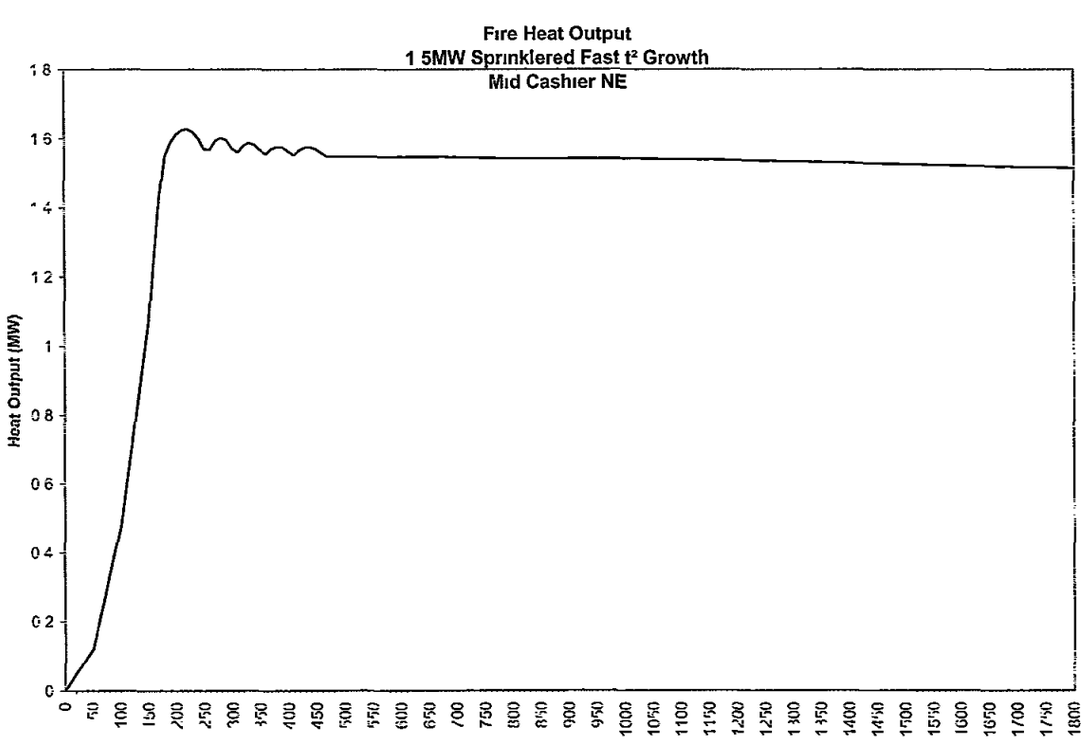
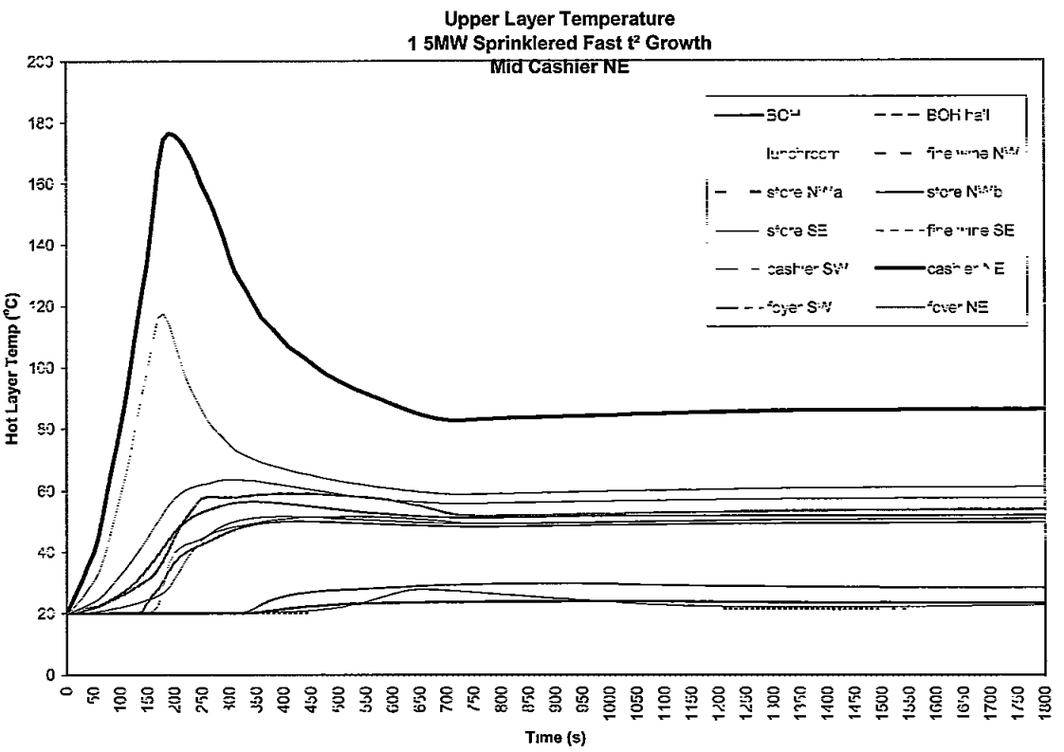
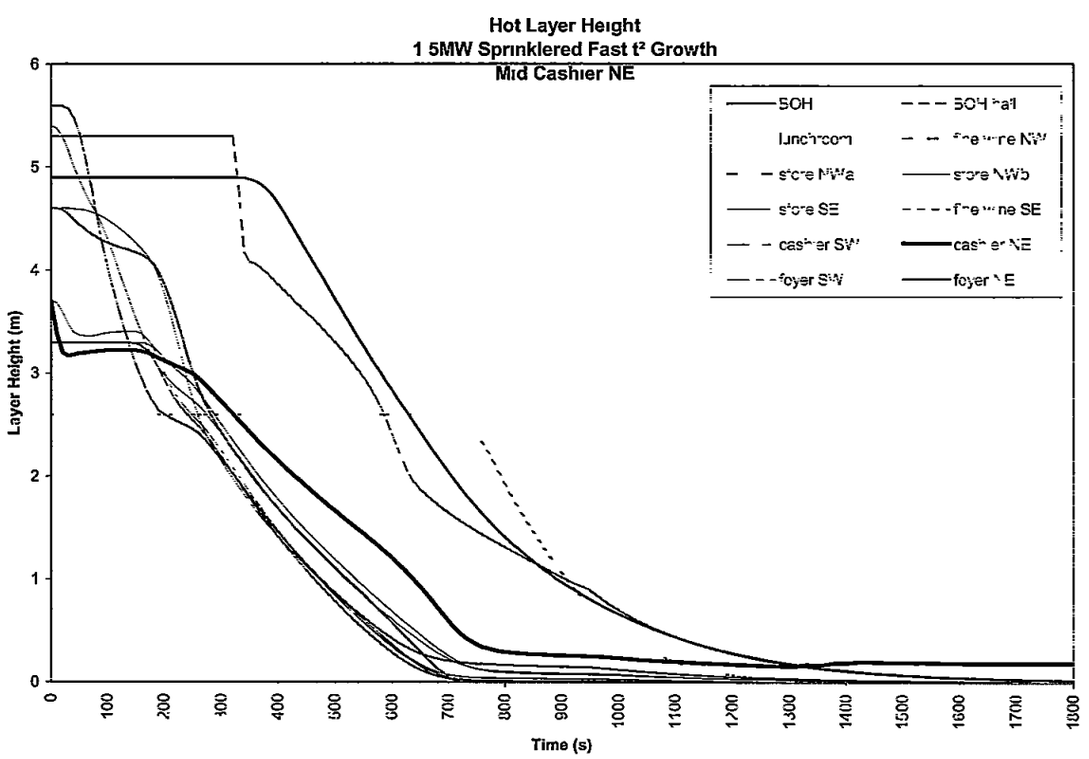



Upper Layer Temperature
1 5MW Sprinklered Fast t² Growth
Mid Cashier NE
Hot Layer Temp (°C)
Time (s)
BOH
BOH hall
store NWa
store NWb
store SE
cashier SW
cashier NE
foyer SW
foyer NE


Hot Layer Height
1 5MW Sprinklered Fast t² Growth
Mid Cashier NE
Layer Height (m)
Time (s)
BOH
BOH hall
store NWa
store NWb
store SE
cashier SW
cashier NE
foyer SW
foyer NE

```
VERSN  5 WOOLWORTHS
TIMES  1810    10    10    20     0
TAMB  293 150      101300  0 000000
EAMB  293 150      101300  0 000000
ADUMP woo11 csv IN

HIF  0 000000 0 000000 0 000000 0 000000 0 000000 0 000000 0 000000 0 000000 0 000000 0 000000 0 000000
WIDTH  12 2000  6 00000  8 70000  10 0000  45 9000  18 9000  18 9000  27 0000  27 0000  27 0000  24 0000
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HEIGH  3 82000  2 65000  3 50000  2 95000  2 65000  3 34000  4 24000  4 24000  4 24000  4 24000  4 24000
CYABS  0 00000  5 70000  5 70000  29 6000  36 7000  7 70000  1 00000  1 00000  19 0000  19 0000  1 00000
CXABS  2 50000  0 00000  6 00000  5 00000  14 7000  14 7000  14 7000  33 6000  33 6000  60 6000  60 6000

CEILI GYPSUM  GYPSUM  GYPSUM  GYPSUM  GYPSUM  GYPSUM  GYPSUM  GYPSUM  GYPSUM
GYPSUM  GYPSUM
WALLS CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE
CONCRETE CONCRETE CONCRETE CONCRETE
FLOOR CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE CONCRETE
CONCRETE CONCRETE CONCRETE CONCRETE

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HVENT  3  7  1  2 00000  3 50000 0 000000 0 000000 0 000000 2 000000  2
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LFBO 1
LFBT 2
CJET ALL

FPOS 3 00000 6 00000 0 000000
FTIME     51 0000     102 000     153 000     180 000     255 000     306 000     357 000     408 000
465 000     1810 00     1861 00     1912 00     1963 00     2014 00     2065 00     2116 00     2167 00
2218 00     2275 00
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0 400367     0 520051     0 520051     0 412229     0 316922     0 234125     0 163840     0 106066     0 0608041
0 0280534     0 00781426     0 000000
FQDOT     0 000000     121987     487948     1 09788E+006  1 54995E-006  1 54995E-006  1 54995E+006
1 54995E+006  1 54995E-006  1 54995E-006  1 54995E-006  1 54995E-006  1 54995E+006  1 54995E+006
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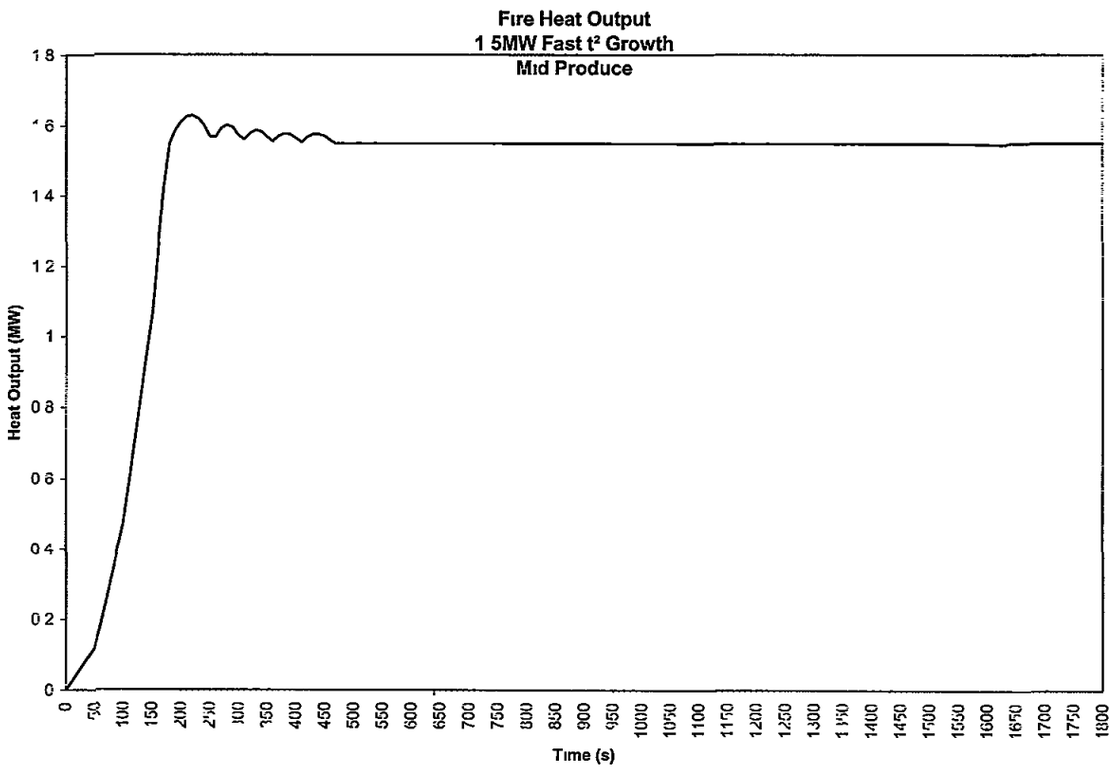

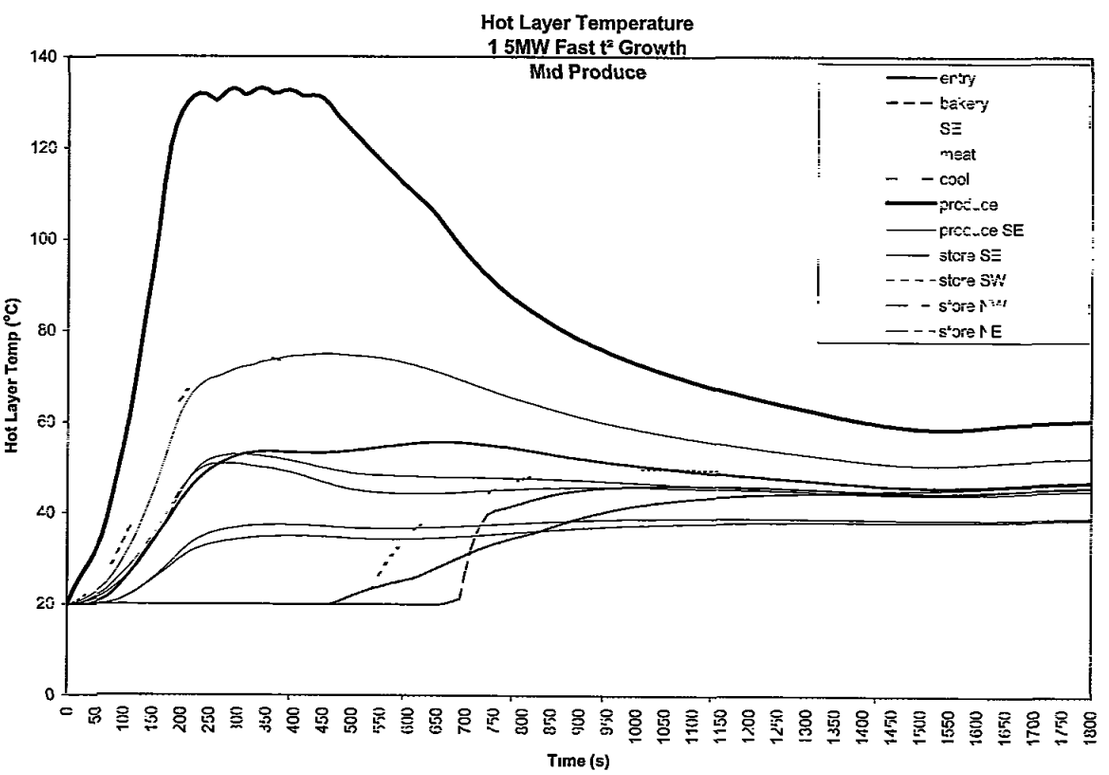

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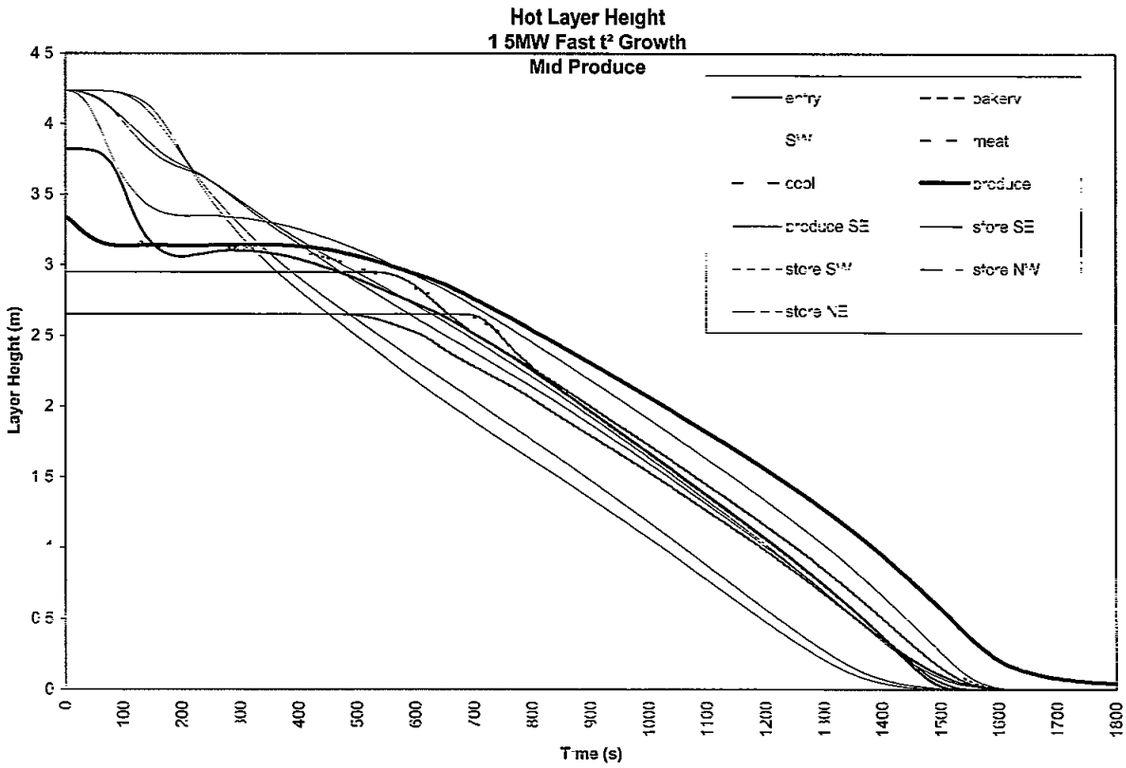

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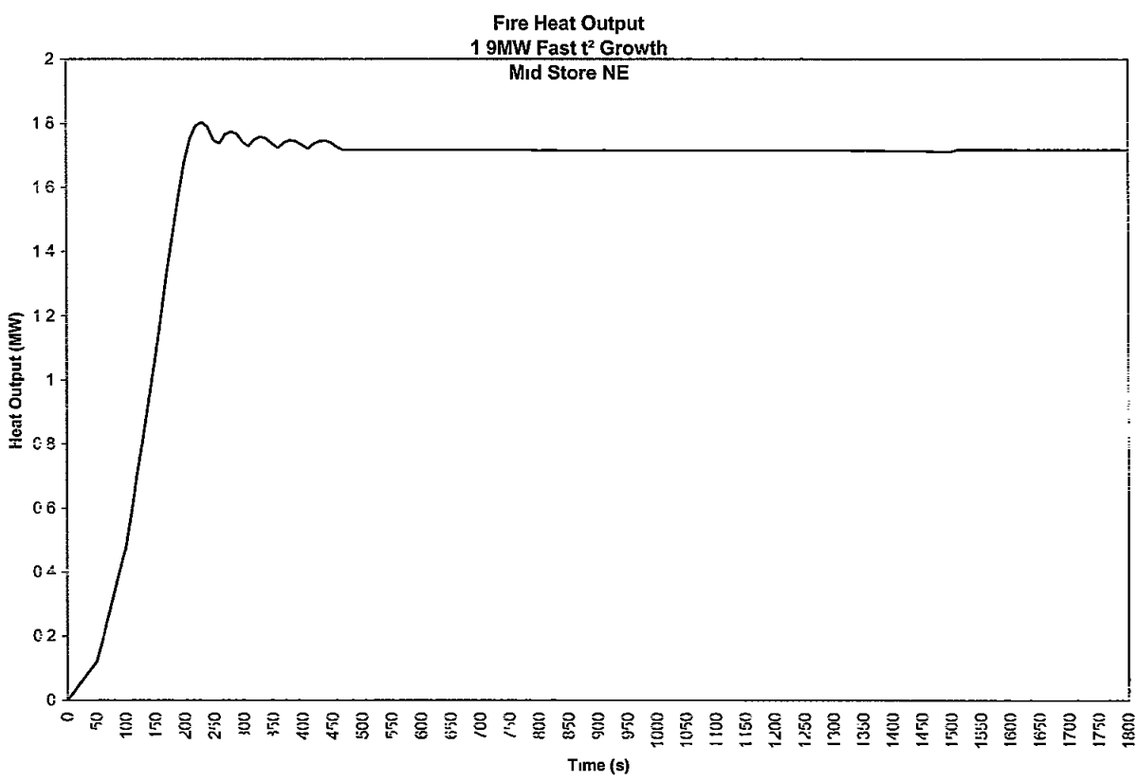

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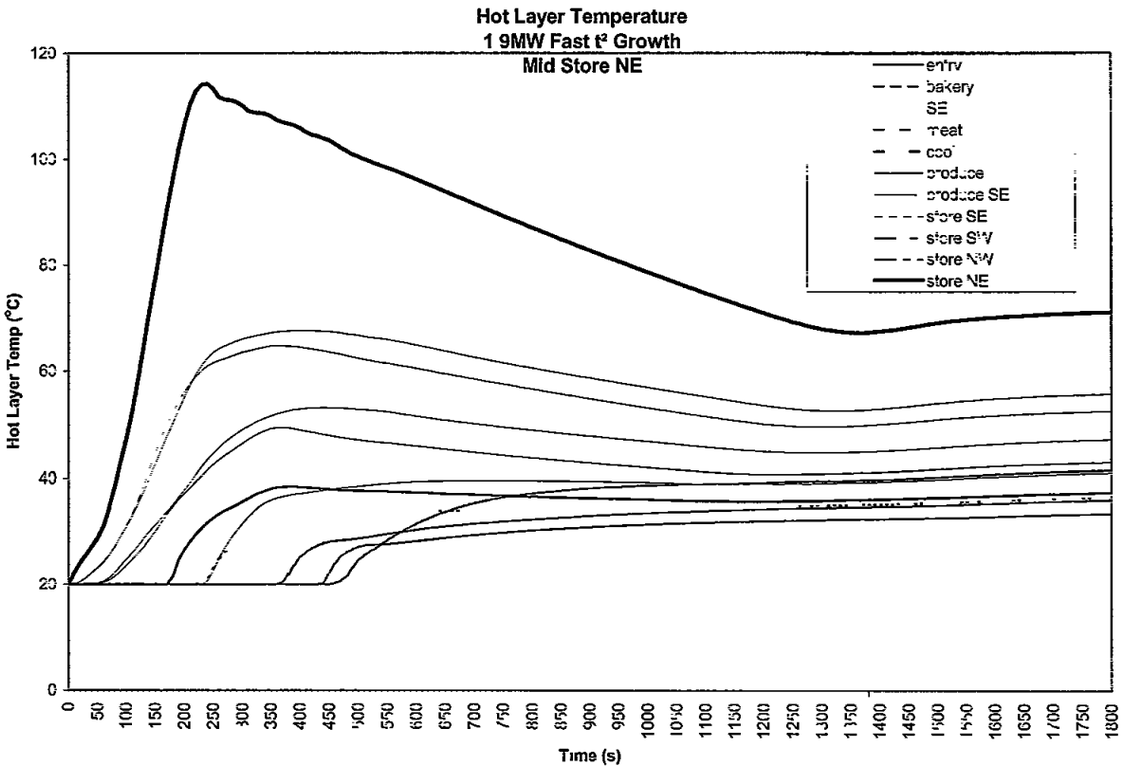
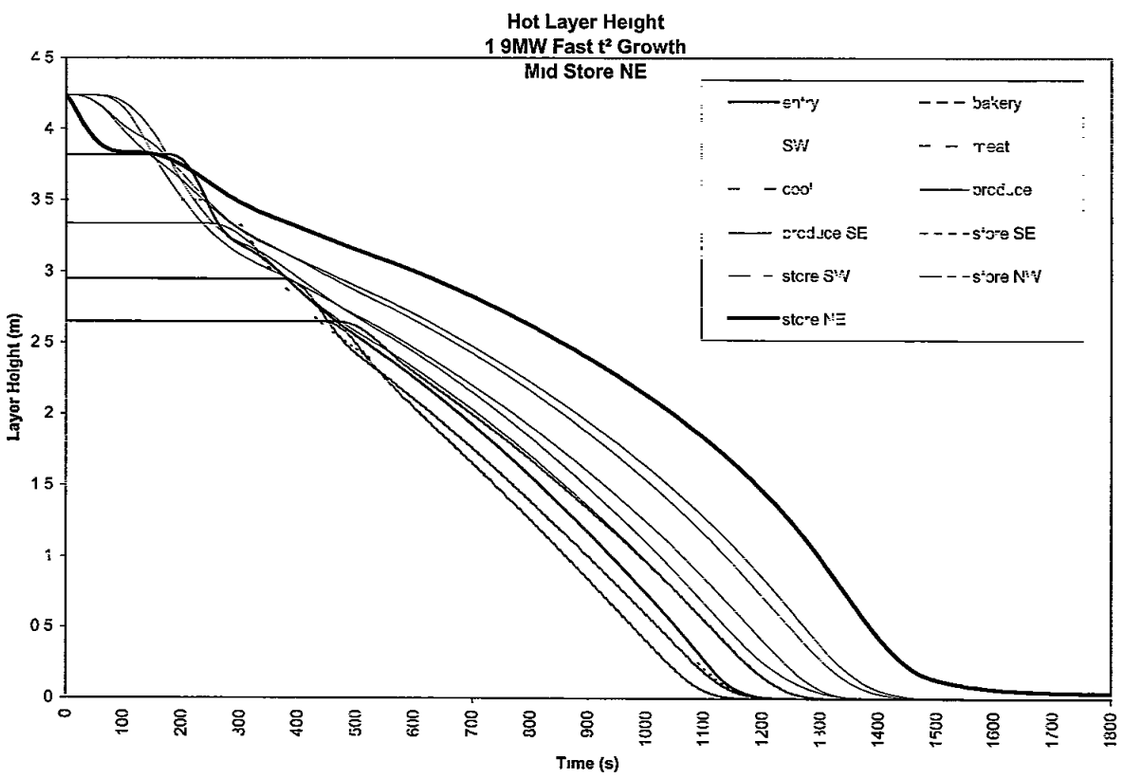




APPENDIX E – PERFORMANCE REQUIREMENTS

Appendix E Table 1

PERFORMANCE REQUIREMENT	ASSOCIATED PERFORMANCE	PROPOSED METHOD OF MEETING PERFORMANCE
Performance Requirement CP9 of Section C (Fire Resistance) of the BCA states that access must be provided to and around a building, to the degree necessary, for fire brigade vehicles and personnel to facilitate fire brigade intervention appropriate to-	The function or use of the building	Normal use for shop/carpark type building
	The fire load	No abnormal fire loads
	The potential fire intensity	Limited by sprinkler protection
	The fire hazard	No abnormal fire hazard
	Any active fire safety systems installed in the building	compliant sprinklers, hydrants, hose reels, fire extinguishers, occupant warning to be installed Smoke detection and alarm to be installed to Dan Murphy's Liquor Store
	The size of any fire compartment	Fire compartments below maximum DtS limitations for large isolated building Protected by sprinkler system

Appendix E Table 2

PERFORMANCE REQUIREMENT	ASSOCIATED PERFORMANCE	PROPOSED METHOD OF MEETING PERFORMANCE
Performance Requirement DP4 of Section D (Access and Egress) of the BCA states that exits must be provided from a building to allow occupants to evacuate safely, with their number, location and dimensions being appropriate to-	The travel distance	Less than 40m
	The number, mobility and other characteristics of occupants	Egress calculations based on estimated highest occupant load
	The function or use of the building	Normal use for shop/carpark type building
	The height of the building	Less than 25m
	Whether the exit is from above or below ground	Above ground

Appendix E Table 3

PERFORMANCE REQUIREMENT	ASSOCIATED PERFORMANCE	PROPOSED METHOD OF MEETING PERFORMANCE
Performance Requirement EP2 2 of Section E (Services and Equipment) the BCA states that in the event of a fire in a building the conditions in any evacuation route must be maintained for the period of time occupants take to evacuate the part of the building so that- The temperature will not endanger human life, the level of visibility will enable the evacuation route to be determined and the level of toxicity will not endanger human life The period of time occupants take to evacuate must be appropriate to-	The number, mobility and other characteristics of the occupants	Egress calculations based on estimated highest occupant load
	The function or use of the building	Normal use for shop/carpark type building
	The travel distance and other characteristics of the building	No excessive travel distances
	The fire load	Fire load in building is not abnormal for the occupancies
	The potential fire intensity	Limited by sprinkler protection
	The fire hazard	Fire hazard in building is not abnormal for the occupancies
	Any active fire safety systems installed in the building	DtS compliant sprinklers, hydrants, hose reels, fire extinguishers, occupant warning to be installed Smoke detection and alarm to be installed to Dan Murphy's Liquor Store
	Fire brigade intervention	Sprinkler activation will initiate automatic call out

Our Ref JC50523

20 August 2007

The Commissioner
NSW Fire Brigades
Fire Prevention Division
Locked Bag 12
P.O GREENACRE NSW 2190

Attention: Mr. Mark Castelli

Dear Sir,

Re: Fire Safety matters-Pittwater Council DA Consent No. N0029/04
Dan Murphy's/Woolworths site-25-29 Park Street-Mona Vale

In accordance with Clause 144 of the Environmental Planning & Assessment Regulation 2000. we respectfully request the Brigades to review the revised report and provide their recommendations with respect to the Category 2 matters arising form Development Consent No B13 for the existing store area

The matters requiring your comments are EP2 2-Smoke Hazard Management System-Clause E2 2-Performance Requirement-EP2 2-report prepared by Engineered Fire & Safety Solutions in August 2005 and updated on 15 August 2007
This report has been prepared as a consequence of concern by council regarding the existing store given that the new Dan Murphy's Liquor store will be deemed-to-satisfy compliant with the applicable provisions of the BCA In addition. we have been informed by the architect that there amendments to the plans thus necessitating the issue of an amended Construction Certificate for the project

Your earliest attention to this matter would be greatly appreciated

Should you require any further information please do not hesitate to contact the undersigned

Yours faithfully,

Simon Dwyer
DLM Certification Pty Ltd

Cc: Woolworths Ltd.
P.O. Box 8000
BAULKHAM HILLS NSW 2153

Attn: Todd Crameri

Encl.

Suite 1, Level 5
56 Railway Parade
Burwood NSW 2134

Locked Bag 3013
Burwood NSW 1805
Ph 9715 2555
Fax 9715 2333
DX 8505

DLM
CERTIFICATION

Our Ref J050523
Your ref FSD/HOB/165144

19 October 2007

NSW Fire Brigades
Fire Prevention Division
Locked Bag 12
P.O. GREENACRE NSW 2190

Attention: Mark Castelli

Dear Sir.

Subject. **Response to Referral under Clause 144 of the EPA Regulation**
Dan Murphys-25 to 29 Park Street, Mona Vale

Subsequent to your receipt of the alternative solution report for the above-mentioned project on ***20 August 2007*** we hereby formally notify you that, in accordance with Clause 144 of the Environmental Planning & Assessment Regulation 2000. the statutory time of twenty-three (23) days has passed and we are going to incorporate the report in our Amended Construction Certificate

We have sought formal agreement with the applicant with respect to this action in the event that you still release your recommendations pursuant to Clause 144 of the Environmental Planning & Assessment Regulation 2000

Should you require any further information please do not hesitate to contact the undersigned

Yours faithfully,

Simon Dwyer
for ***DLM Certification Pty Ltd***

Cc: **Woolworths Ltd.**
P.O. Box 8000
BAULKHAM HILLS NSW 2153

Attention: Greg Lucas

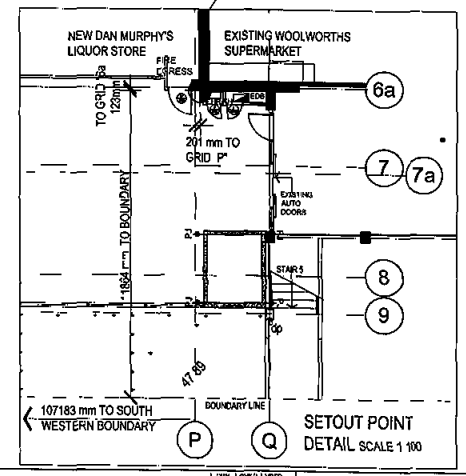
ENCL.

Suite 1, Level 5
56 Railway Parade
Burwood NSW 2134

Locked Bag 3013
Burwood NSW 1805
Ph 9715 2555
Fax 9715 2333
DX 8505

MONA VALE MARKET SQUARE - REVISED RAMP LAYOUT
GROUND FLOOR PLAN

SITE PLAN SCALE 1:200



SETOUT POINT DETAIL SCALE 1:100

This Plan/Specification forms part of the certification for

JO 505236 19 OCT 2007

LEGEND											
GENERAL			CDP	CARPARK DRAINAGE PIT	FE	FIRE EXTINGUISHER	MDF	TELSTRA MAIN DISTRIBUTION FRAME	ST	STORM WATER
			CRP	TIMBER CHAIR RUB RAIL	FHR	FIRE HOSE REEL	MSB	MAIN SWITCH BOARD	SW	SEWER
SYMBOL	KEY		CW	COLD WATER	FH	FIRE HYDRANT	PP	POWER POLE	TBR	TIMBER BUFFER RAIL
BS	BRASS STRIP			REFER TO DOOR SCHEDULE	FW	FLOOR WASTE	RB	REMOVABLE BOLLARD	TD	TUNDISH
BSN	BASIN		DP	DOWNPIPE	GW	GLASS WASHER	RSD	ROLLER SHUTTER DOOR	UR	URINAL
BT	BUCKET TRAP		EAS	SECURITY DEVICE	HC+	HOT/COLD WATER MIXER	SB	STAINLESS STEEL BOLLARD	VP	VENT PIPE
BWU	BOILING WATER UNIT		FB	FIXED BOLLARD	HR	HANDRAIL	SFW	SEALED FLOOR WASTE	WC	WATER CLOSET
CBR	COOLROOM BUFFER RAIL		FDC	FORCED D'RAUGHT COOLER	HW	HOT WATER	SK	SINK	WG	WANZEL GATE
					HWS	HOT WATER SYSTEM	SSC	SECURITY SCREEN		

NOTES

ALL DIMENSIONS NOTED TO BE READ IN PREFERENCE TO SCALING OF DRAWING

THIS DRAWING TO BE READ IN CONJUNCTION WITH ELECTRICAL, MECHANICAL, HYDRAULIC DETAIL DRAWINGS AND CONSTRUCTION SUMMARY

ALL PLANTS DIMENSIONS & DETAILS TO BE PROVIDED BY REFRIGERATION CONSULTANT

EXTERNAL MECHANICAL STEELWORK GALVANISED SHALL BE HOT DIPPED GALVANISED TO COMPLY TO AUSTRALIAN STANDARDS.

CONCEALED JOINT WORK WILL NOT BE PERMITTED IN ASHLARS, OFFICES & PROTRUSION AREAS.

ALL FITTINGS EDGE MOUNT STEEL SHALL BE REBATED AT ALL JUNCTIONS TO CONCEAL FIXINGS AND CONCRETE SLAB & SCREED TILES TO SMOOTH FLOOR

REV	DATE	COMMENTS	DRN	CHKD
B	03.03.2005	CONSULTANT ISSUE	JMM	KG
C	09.03.2005	CONSULTANT ISSUE	JMM	KG
D	17.03.2005	WWPV CONSULTANT ISSUE	JMM	KG
E	24.03.2005	ISSUED FOR CO-ORDINATION	JMM	KG
F	29.03.2005	ISSUED FOR CO-ORDINATION	RJD	KG
G	10.04.2005	1ST ISSUE	RJD	KG
1	04.04.2006	ISSUED FOR TENDER	RJD	KG
2	25.05.2006	ISSUED FOR INFORMATION	RJD	KG
3	03.11.2006	ISSUED FOR INFORMATION	RJD	KG
4	16.11.2006	ISSUED FOR CONSTRUCTION CERTIFICATE	RJD	KG
5	24.05.2006	ISSUED FOR CONSTRUCTION CERTIFICATE	RJD	KG
6	12.10.2006	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING TO SUIT THE CHANGES	MP	KG
7	09.11.2006	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING TO SUIT THE CHANGES	MP	KG
8	08.11.2006	ISSUED FOR TENDER	MP	KG
9	27.11.2006	CHANGES TO CARPARK	MP	KG
10	18.12.2006	ISSUED FOR CONSTRUCTION CERTIFICATE	MP	KG
11	17.01.2007	ISSUED FOR CONSTRUCTION	MP	KG
12	02.03.2007	ISSUED FOR CONSULTANTS	MP	KG
13	16.03.2007	ISSUED FOR CONSULTANTS	MP	KG
14	19.04.2007	AMENDMENT TO LIFT SHAFT TRAVELATOR & PEDESTRIAN CROSSING.	MP	KG
15	30.05.2007	Pedestrian Crossing & Light Poles to Car deck amended	BLC	KG

EVE ARCHITECTURE
412 King Street
NY 08 & NSW 2300
Phone (07) 4929 2000
F (07) 4926 3069
eve@e.com.au

Dan Murphy's

ADMINISTRATION OFFICE
788 HEIDELBERG ROAD,
ALPHINGTON,
VICTORIA, 3078.
Telephone (03) 9497 3388
Facsimile (03) 9497 3782

WOOLWORTHS LIMITED
ACN 000 014 675
3-5 UNDERWOOD ROAD HOMEBUSH NSW 2140
P.O. BOX 583 SYDNEY MARKETS NSW 2129
TELEPHONE (02) 8762 9917 FACSIMILE (02) 9762 9642

PROJECT	MONA VALE MARKET SQUARE CNR WARATAH KEENAN & PARK ST STORE N1 1263
DRAWING	SITE PLAN
DRAWN BY	JMM
SCALE	1 200
DRAWING No	A02
EVE PROJECT NO.	6429
DATE	APR 2005
RT ISSUE	Nov 2003
PROJECT NO	
CAD	

This Plan/Specification forms part of the certification for

DA 505248 19 OCT 2007

CONSTRUCTION JOINT

ADJOINING WOOLWORTHS SUPERMARKET

GROUND FLOOR PLAN SCALE 1:100

STAIR 6 PLAN SCALE 1:100

ACCESS TO PLATFORM IN NEW DAN MURPHY'S

PART GROUND FLOOR PLAN SCALE 1:50

LEGEND	
GENCRAL	
SYMBOL	KEY
BBSV	BLACK VINYL SKIRTING
BS	BASALT STRIP
BSN	BASIN
BT	BUCKET TRAP
BWU	BUILING WATER UNIT
CBR	COOLROOM BUTTER RAIL
CLS	CLEANERS SINK
CRP	TIMBER CHAIR RUB RAIL
CW	COLD WATER
	REFER TO DOOR SCHEDULE
DP	DOWNPIPE
DWR	DRAWER UNIT
EAS	SECURITY DEVICE
FB	FIXED BOLLARD
FDC	FORCED DRAUGHT COOLER
FE	FIRE EXTINGUISHER
FHC	FULL HEIGHT CHAINWIRE MESH
FHR	FIRE HOSE RECL
FHRFH	FIRE HYDRANT & HOSE REEL
FW	FLOOR WASTE
GW	GLASS WASHER
HCH	HOT/COLD WATER MIXER
HR	HANDRAIL
HW	HOT WATER
HWS	HOT WATER SYSTEM
MDF	TELSTRA MAIN DISTRIBUTION FRAME
MSB	MAIN SWITCH BOARD
MSSB	MECHANICAL SERVICES SWITCH BOARD
PD	PALLET DISPLAY
RB	REMOVABLE BOLLARD
RSD	ROLLER SHUTTER DOOR
SB	STAINLESS STEEL BOLLARD
SFW	SEALED FLOOR WASTE
SK	SINK
SSC	SECURITY SCREEN
ST	STORM WATER
SW	SHOWER
TBR	TIMBER BUTTER RAIL
TI	TACTILE INDICATOR
TPH	TOILET PAPER HOLDER
TD	TUNDISH
UR	URINAL
VP	VENT PIPE
WC	WATER CLOSET
WG	WANZI GATE

LEGEND		
FLOOR FINISHES		
SYMBOL	KEY	
CT	CERAMIC TILES	
CS	CONCRETE / TRAFFICABLE	
VT	VINYL TILES	
VST	VINYL STRIP FLOORING	
NOTE REFER TO DCOR PLAN DRAWING FOR FINISHES SETOUT INCLUDING ALL FLOOR PREPARATION & QUANTITIES		
LEGEND		
WALL CONSTRUCTION TYPES		
	EXISTING WALL	
	NEW CONCRETE BLOCKWORK	
	NEW 90mm STUD WALL UNLESS STATED OTHERWISE	
	NEW 100mm LOADTOOM PANELS	

NOTES

ALL DIMENSIONS SHOWN ON PLANS TO BE CHECKED ON SITE BEFORE COMMENCING ANY WORK OR SHOP DRAWINGS. DO NOT SCALE OFF DRAWING.

THIS DRAWING TO BE READ IN CONJUNCTION WITH ELECTRICAL, MECHANICAL, HYDRAULIC, FIRE, STRUCTURAL DRAWINGS AND SPECIFICATIONS AS NECESSARY.

ALL FLOOR DIMENSIONS & DETAILS TO BE PROVIDED BY REFRIGERATION CONTRACTOR.

EXTERNAL DOWNPIPES AND GUTTERS AS SHOWN SHALL BE HOT DIPPED GALVANISED AFTER FABRICATION.

EXPOSED SOFT WOOD WILL NOT BE PERMITTED IN KITCHENS, OFFICES & AMENITIES AREAS.

ALL EXPOSED EDGES TO BE FULL RADIUS TO MATCH ADJACENT FINISHES.

REV	DATE	COMMENTS	DRW	CHKD	VRFD
A	28 02 2005	ISSUE FOR INFORMATION	JMM	KG	
B	03 03 2005	CONSULTANT ISSUE	JMM	KG	
C	08 03 2005	CONSULTANT ISSUE	JMM	KG	
D	17 03 2005	WW PV CONSULTANT ISSUE	JMM	KG	
E	24 03 2005	ISSUE FOR COORDINATION	JMM	KG	
F	29 03 2005	ISSUE FOR COORDINATION	RJD	KG	
G	01 04 2005	TENDER ISSUE	RJD	KG	
1	04 04 2005	ISSUED FOR TENDER	RJD	KG	
2	25 08 2005	ISSUED FOR INFORMATION	RJD	KG	
3	03 11 2005	ISSUED FOR INFORMATION	RJD	KG	
4	18 11 2005	ISSUED FOR CONSTRUCTION CERTIFICATE	RJD	KG	

REV	DATE	COMMENTS	DRW	CHKD	VRFD
5	12 10 2006	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING, TO SUIT THE CHANGES	MP	KG	
6	06 11 2006	ISSUED FOR TENDER	MP	KG	
7	18 12 2006	ISSUED FOR CONSTRUCTION	MP	KG	
8	02 03 2007	ISSUED FOR CONSULTANTS	MP	KG	
9	15 03 2007	ISSUED FOR CONSULTANTS	MP	KG	
10	19 04 2007	AMENDMENT TO LIFT SHAFT & TRAVELATOR	NDY	KG	
13	23 05 2007	REINSTATEMENT OF THE RETURN PANEL	BD	KG	
13	13 06 2007	UPDATED DIMENSIONS & STRUCTURAL COLUMNS	MP	KG	
17	26 09 2007	DIMENSIONS TO GRID LINES TILES SETOUT POINT	MP	KG	

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PROJECT
MONA VALE MARKET SQUARE
CNR WARATAH, KEENAN & PARK ST
STORE NR 1263

DRAWING
NEW GROUND FLOOR PLAN

DRAWN BY	SCALE	DRAWING No
RJD	1 100	A03
JOB PROJECT NO.	DATE	JOB ISSUE
6429	APR 2005	NOV 2003
PROJECT NO.	CAD	AMENDMENT No
---	AutoCAD 2004	12

KEENAN STREET

PARK STREET

WARATAH STREET

NEW BASEMENT CARPARK
RL 46 95
152 NEW SPACES

EXISTING CARPARK
135 SPACES

BASEMENT CARPARK PLAN 1 200

SECTION 01
(NEW RAMP IN CARPARK)
SCALE 1 100

RAMP TO CARPARK LEVEL 1 200

BASEMENT DETAIL PEDESTRIAN ENTRY / EXIT 1 100

This Plan/Specification forms part of the certification for

JO 50527 dated 19 OCT 2007

LEGEND

GENERAL

SYMBOL	KEY
COP	CARPARK DRAINAGE PIT
BS	STAINLESS STEEL BOLLARD
VT	VINYL TILES
STC	STEEL TROWELLED CONCRETE

LEGEND

WALL CONSTRUCTION TYPES

- EXISTING WALL
- NEW CONCRETE BLOCKWORK
- NEW 90mm STUD WALL UNLESS STATED OTHERWISE
- NEW 100mm COOLROOM PANELS
- CHAIN WIRE MESH
- PRECAST CONCRETE PANEL

NOTES

ALL DIMENSIONS, SETS, LEVELS, MEASUREMENTS AND CONDITIONS ARE TO BE CHECKED PRIOR TO SCALING OF DRAWING. ANY ERRORS TO BE REPORTED IMMEDIATELY.

THIS DRAWING TO BE READ IN CONJUNCTION WITH ELECTRICAL, MECHANICAL, HYDRAULIC, STRUCTURAL ENGINEERS AND CONSTRUCTION MANAGERS DRAWINGS.

ALL SURVEY DIMENSIONS & DETAILS TO BE PROVIDED BY REPRESENTATIVE CONTRACTOR.

EXTERNAL WALLS SHOWN ATTACHED OR ADJOINING WALLS, BE NOT OPPED DOWNWARDS TO CONFORM TO AUSTRALIAN STANDARDS.

ADJOINING WALLS SHOWN WILL NOT BE PERMITTED IN AMENITIES, OFFICES & ADMINISTRATION AREAS.

ALL PAINTWORK SHOWN ABOVE SHALL BE PROVIDED AT ALL JUNCTIONS WITH CEILINGS AND FLOOR CONCRETE SLABS AT FIRST AND GROUND FLOOR.

REV	DATE	COMMENTS	DRN	CHKD	VRFD
A	28.02.2006	ISSUE FOR INFORMATION	JMM	KG	
B	03.03.2006	CONSULTANT ISSUE	JMM	KG	
C	06.03.2006	CONSULTANT ISSUE	JMM	KG	
D	17.03.2006	WW PV CONSULTANT ISSUE	JMM	KG	
E	24.03.2006	ISSUED FOR CO-ORDINATION	JMM	KG	
F	29.03.2006	ISSUED FOR CO-ORDINATION	RJD	KG	
G	31.03.2006	TENDER ISSUE	JMM	KG	
H	05.04.2006	TENDER ISSUE	RJD	KG	
J	25.08.2006	ISSUED FOR INFORMATION	RJD	KG	
K	03.11.2006	ISSUED FOR INFORMATION	RJD	KG	
L	16.11.2006	ISSUED FOR CONSTRUCTION CERTIFICATE	RJD	KG	
M	12.06.2006	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING TO SUIT THE CHANGE*	MP	KG	
N	08.11.2006	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING TO SUIT THE CHANGES	MP	KG	
P	06.11.2006	ISSUED FOR TENDER	MP	KG	

REV	DATE	COMMENTS	DRN	CHKD	VRFD
Q	21.11.2006	CHANGES TO FIRE EXITS	MP	KG	
R	18.12.2006	ISSUED FOR CONSTRUCTION CERTIFICATE	MP	KG	
S	12.01.2006	ISSUED FOR CONSTRUCTION	MP	KG	
T1	15.03.2007	ISSUED FOR CONSULTANTS	MP	KG	
U	03.04.2007	ISSUED FOR CONSULTANTS	MP	KG	
13	19.04.2007	AMENDMENT TO LIFT SHAFT & TRAVELATOR	MP	KG	
14	02.05.2007	AMENDMENT TO COLUMNS	MP	KG	
15	24.09.2007	AMENDMENT TO SPRINKLER VALVE ROOM	MP	KG	
16	12.06.2007	ADDITIONAL DIMENSIONS & AMENDMENT AS SHOWN	MP	KG	
17	26.06.2007	DIMENTIONS TO GRID LINES SETOUT POINT FOR FILING & BALUSTRADE FOR STAIR 5	MP	KG	

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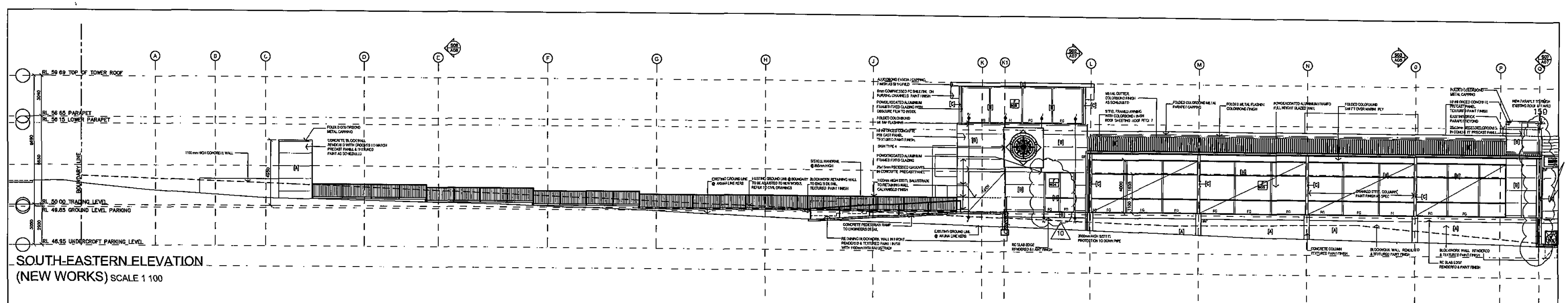
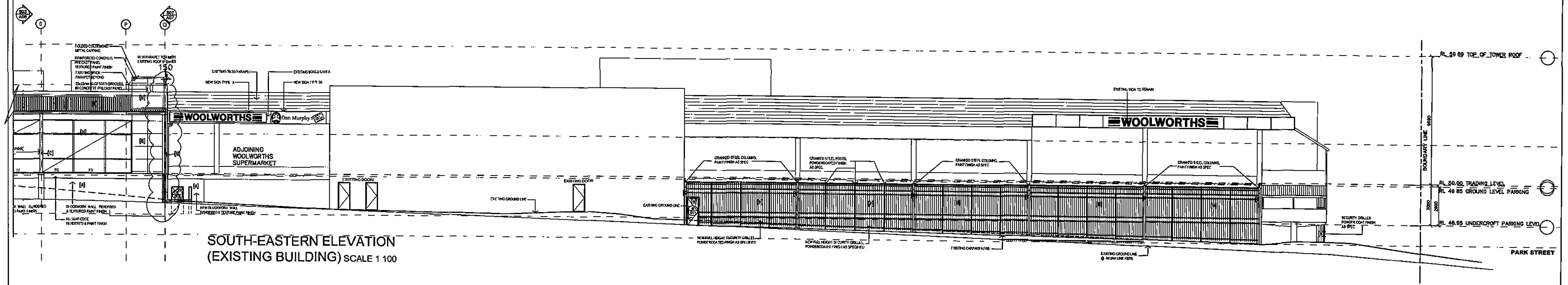
PROJECT : MONA VALE MARKET SQUARE
CNR WARATAH, KEENAN & PARK ST
STORE NI 1263

DRAWING : BASEMENT PLAN

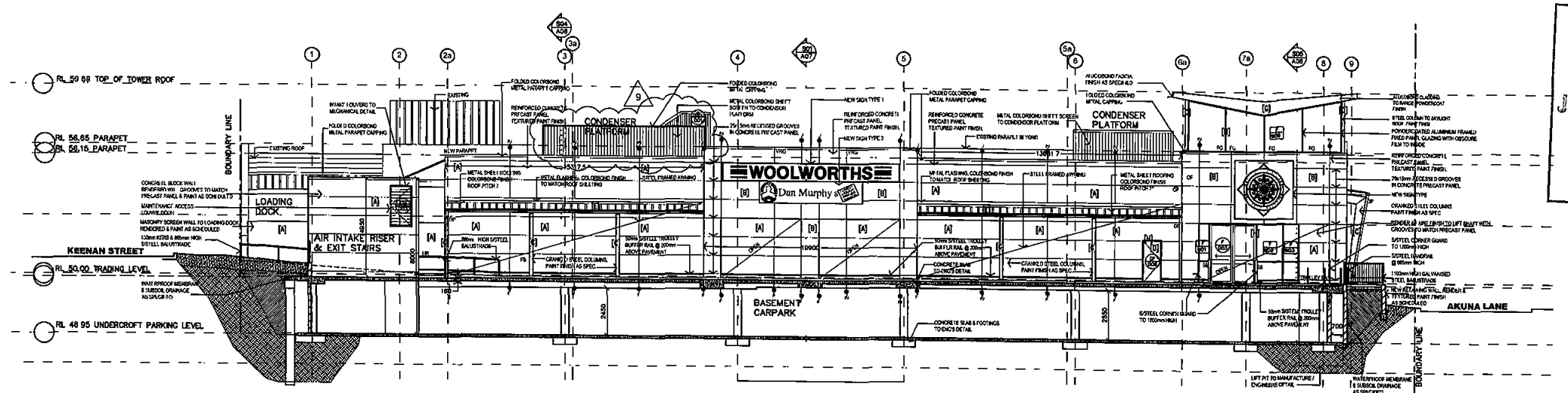
DRAWN BY	SCALE	DRAWING No :
JMM	AS SHOWN	A04
E.E. PROJECT NO.:	DATE	ISSUE
6429	FEB 2005	Nov 2003
PROJECT NO.:	CAD :	AMENDMENT No :
---	AutoCAD 2004	17 26.06.2007



SOUTH-EASTERN ELEVATION
(NEW WORKS) SCALE 1 100



SOUTH-EASTERN ELEVATION
(EXISTING BUILDING) SCALE 1 100



SOUTH-WESTERN ELEVATION SCALE 1 100

This Plan/Specification forms part of the certification for

JO 50523a 19 OCT 2007

NOTE.
PROVIDE CLEAR VANDAL RESISTANT FINISH TO ALL PAINTED MASONARY SURFACES eg PRECAST PANEL & RENDERED CONCRETE BLOCKWORK & PAINTED BRICKWORK) UP TO 4000mm ABOVE FINISHED SURFACE LEVEL.

LEGEND

EXTERNAL COLOUR FINISHES

[A]	GENERAL PRECAST PANELS WALL & RENDERED WALL COLOUR	TEXTURED PAINT FINISH DULUX 'MUD PACK' P14–B4
[B]	PRECAST PANEL WALL TO ENTRY STATEMENT TOWER	TEXTURED PAINT FINISH DULUX 'WESTERN MYALL P01–F7
[C]	STEEL COLUMNS	PACK EPOXY DULUX RED CROSS' P04–H9
[D]	SOLID CORE DOOR & FRAME	GLOSS ENAMEL DULUX FRONTIER FORT P11–C3
[E]	AWNING SHEET METAL ROOFING SHUTTER ROLLER DOOR	COLORBOND 'SHALE GRAY'
[G]	ENTRY TOWER ROOF FASCIA & EAVES POWDER COATED ALLUCOBOND	DULUX RED CROSS' P04–H9
[H]	WINDOW FRAMING, LOUVRE POWDERCOATING & SECURITY GRILLES	POWDERCOAT DULUX APO GRAY(S)

LEGEND

GENERAL

SYMBOL	KEY
BS	BRASS STRIP
BSN	BASIN
BT	BUCKET TRAP
EWU	BOILING WATER UNIT
CBR	COOLROOM BUFFER RAIL
CLS	CLEANERS SINK
CRP	TIMBER CHAIR RUB RAIL
CW	COLD WATER
DO	REFER TO DOOR SCHEDULE
DP	DOWNPIPE
EAS	SECURITY DEVICE
FB	FIXED BOLLARD
FG	FIXED GLAZING
FE	FIRE EXTINGUISHER
FHR	FIRE HOSE REEL
FHR/TH	FIRE HYDRANT & HOSE REEL
FW	FLOOR WASTE
GW	GLASS WASHER
HC+	HOT/COLD WATER MIXER
HR	HANDRAIL
HW	HOT WATER
HWS	HOT WATER SYSTEM
MSB	MAIN SWITCH BOARD
OF	OVER FLOW
PJ	PRECAST PANEL JOINT
RB	REMOVABLE BOLLARD
RSD	ROLLER SHUTTER DOOR
SB	STAINLESS STEEL BOLLARD
SFW	SEALED FLOOR WASTE
SK	SINK
SSC	SECURITY SCREEN
ST	STORM WATER
SW	SEWER
TBR	TIMBER BUFFER RAIL
TD	TUNDISH
UR	URINAL
VP	VENT PIPE
VRG	VERTICAL RECESSED GROOVE
WC	WATER CLOSET
WG	WANZEL GATE

NOTES

ALL DIMENSIONS NOTED TO BE IN MILLIMETRES.
FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING OF DRAWING.
THIS DRAWING TO BE READ IN CONJUNCTION WITH ELECTRICAL, MECHANICAL, HYDRAULIC, METAL ENGINEERS' DRAWINGS AND CONSTRUCTION SUMMARY.
ALL PLANS, DRAWINGS & DETAILS TO BE PROVIDED BY INTRODUCTION CONSTRUCTION.
EXISTING TREES NOTED TO BE CONSERVED SHALL BE NOT DIPPED OR DAMAGED TO COMPLY TO AUSTRALIAN STANDARDS.
FIGURED TEXT ONLY WILL NOT BE PERMITTED IN ARCHITECTS, OFFICES & PROFESSIONAL ADVICE.
ALL DIMENSIONS, SHOP DRAWINGS SHALL BE PROVIDED TO ALL JUNCTIONS OF WORK TO BE CONSTRUCTED IN SITU & CHANGE FLOOR

REV	DATE	COMMENTS	DRN	CHKD	VISTD
P	25.02.2005	PRELIMINARY ISSUE FOR INFORMATION	BDW	KG	
A	29.07.2005	ISSUE FOR INFORMATION	BDW	KG	
B	3.03.2005	ISSUED TO CONSULTANTS	BDW	KG	
C	8.03.2005	ISSUED TO CONSULTANTS'	BDW	KG	
D	17.03.2005	WW PV CONSULTANT ISSUE	BDW	KG	
E	24.03.2005	ISSUE FOR COORDINATION	BDW	KG	
F	29.03.2005	ISSUE FOR COORDINATION	BDW	KG	
G	31.03.2005	ISSUE FOR TENDER	BDW	KG	
1	04.04.2005	ISSUE FOR TENDER	BDW	KG	
2	25.08.2005	ISSUED FOR INFORMATION	R/D	KG	

NO	DATE	COMMENTS	DRN	CHKD	VISTD
4	15.11.2005	ISSUED FOR CONSTRUCTION CERTIFICATE	R/D	KG	
5	12.12.2006	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING TO SUIT THE CHANGES	BDW	KG	
6	06.11.2006	ISSUED FOR TENDER	BDW	KG	
7	15.01.2006	ISSUED FOR CONSTRUCTION	BDW	KG	
8	02.02.2007	ISSUED FOR CONSULTANTS	BDW	KG	
9	16.02.2007	ISSUED FOR CONSULTANTS	BDW	KG	
10	19.04.2007	AMENDMENT TO LIFT SHAFT (CONCRETE WALL & GLAZING IN FACADE)	BDW	KG	

EVE ARCHITECTURE

Dan Murphy's

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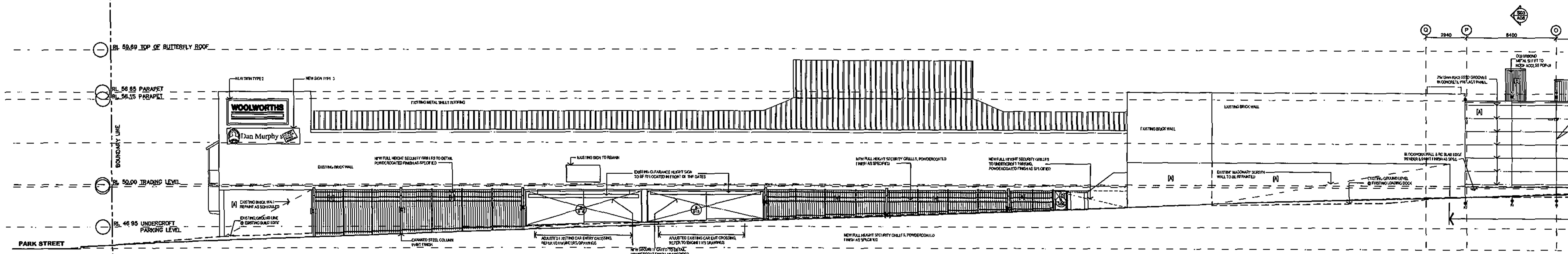
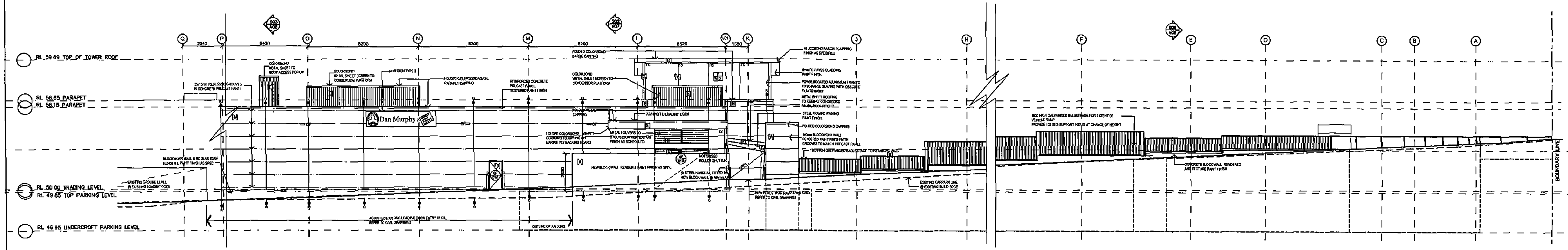
PROJECT
MARKET SQUARE MONA VALE
CNR WARATAH, KEENAN & PARK ST
STORE NO 1263

DRAWING
ELEVATIONS

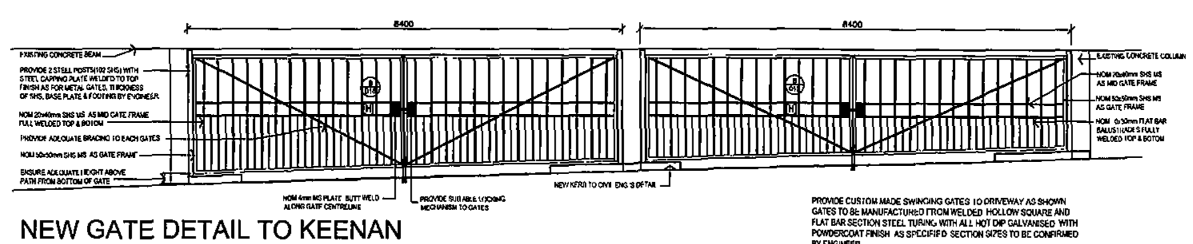
DRAWN BY	SCALE	DRAWING No
BDW	1 100	A 05
E/E PROJECT NO.	DATE	HT ISSUE
6429	FEB 2005	NOV 2003
PROJECT NO.	CAD I	AMENDMENT No 1



NORTH-WESTERN ELEVATION
(EXISTING BUILDING) SCALE 1 100

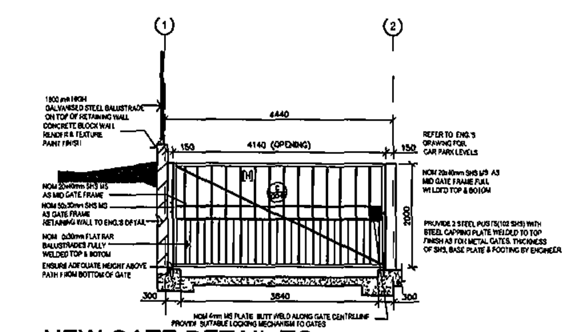


NORTH-WESTERN ELEVATION
(NEW WORKS) SCALE 1 100



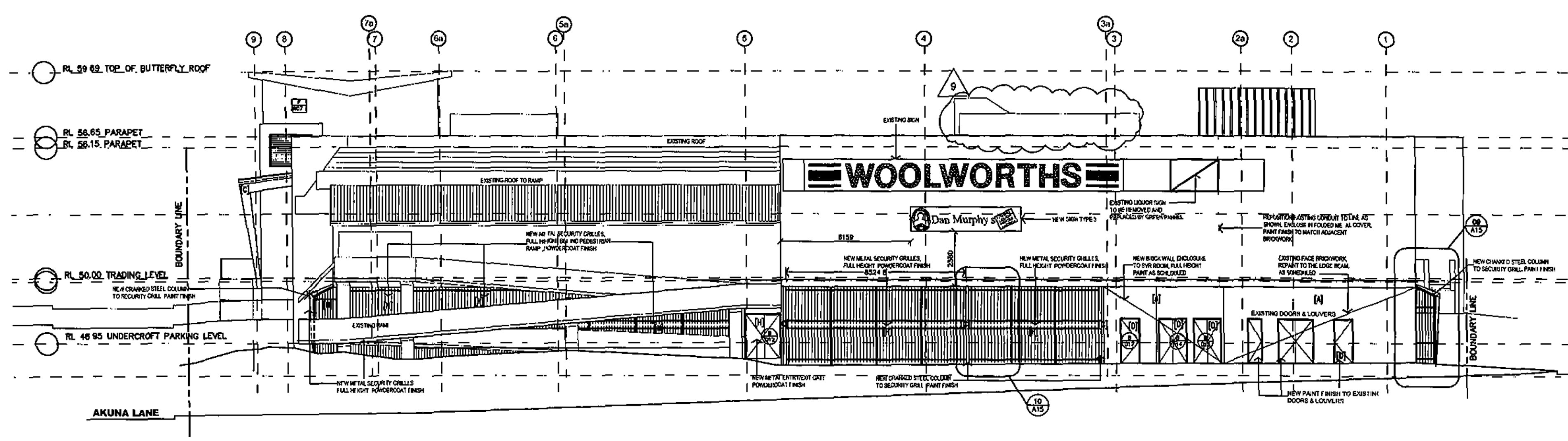
NEW GATE DETAIL TO KEENAN
STREET ENTRY - ELEVATION SCALE 1 50

PROVIDE CUSTOM MADE SWINGING GATES TO DRIVEWAY AS SHOWN GATES TO BE MANUFACTURED FROM WELDED HOLLOW SQUARE AND FLAT BAR SECTION STEEL TUBING WITH ALL HOT DIP GALVANISED WITH POWDERCOAT FINISH AS SPECIFIED SECTION SIZES TO BE CONFIRMED BY ENGINEER.



NEW GATE DETAIL TO
BASEMENT CARPARK
(ON GROUND FLOOR LEVEL)
SCALE 1 50

PROVIDE CUSTOM MADE SWINGING GATES TO DRIVEWAY AS SHOWN GATES TO BE MANUFACTURED FROM WELDED HOLLOW SQUARE AND FLAT BAR SECTION STEEL TUBING WITH ALL HOT DIP GALVANISED WITH POWDERCOAT FINISH, AS SPECIFIED SECTION SIZES TO BE CONFIRMED BY ENGINEER.



NORTH-EASTERN ELEVATION SCALE 1 100

This Plan/Specification forms part of the certification for
[stamp number illegible] 19 OCT 2007

NOTE.
PROVIDE CLEAR VANDAL RESISTANT FINISH TO ALL PAINTED MASONARY SURFACES (eg. PRECAST PANEL & RENDERED CONCRETE BLOCKWORK & PAINTED BRICKWORK) UP TO 4000mm ABOVE FINISHED SURFACE LEVEL.

LEGEND

EXTERNAL COLOUR FINISHES

[A]	GENERAL PRECAST PANELS WALL & RENDERED WALL COLOUR	TEXTURED PAINT FINISH DULUX MUD PACK' P14-B4
[B]	PRECAST PANEL WALL TO ENTRY STATEMENT TOWER	TEXTURED PAINT FINISH DULUX 'WESTERN MYALL PG1-F7
[C]	STEEL COLUMNS	PACK EPOXY DULUX 'RED CROSS P04-H9
[D]	SOLID CORE DOOR & FRAME	GLOSS ENAMEL DULUX 'FRONTIER FORT' P11-C3
[E]	AWNING SHEET METAL ROOFING SHUTTER ROLLER DOOR	COLORBOND SHALE GRAY'
[G]	ENTRY TOWER ROOF FASCIA & EAVES POWDER COATED ALUCOBOND	DULUX RED CROSS' P04-H9
[H]	WINDOW FRAMING LOUVRE POWDERCOATING & SECURITY GRILLES	POWDERCOAT DULUX APO GRAY(S)

LEGEND

GENERAL

SYMBOL	KEY										
		CLS	CLEANERS SINK	FE	FIRE EXTINGUISHER	MSB	MAIN SWITCH BOARD	ST	STORM WATER		
		CRP	TIMBER CHAIR RUB RAIL	FHR	FIRE HOSE REEL	OF	OVER FLOW	SW	SEWER		
		CW	COLD WATER	FHR/FH	FIRE HYDRANT & HOSE REEL	PJ	PRECAST PANEL JOINT	TBR	TIMBER BUFFER RAIL		
		(symbol)	REFER TO DOOR SCHEDULE	FW	FLOOR WASTE	RB	REMOVABLE BOLLARD	TD	TUNDISH		
BS	BRASS STRIP			GW	GLASS WASHER	RSD	ROLLER SHUTTER DOOR	UR	URINAL		
BSN	BASIN	DP	DOWNPIPE	HC+	HOT/COLD WATER MIXER	SB	STAINLESS STEEL BOLLARD	VP	VENT PIPE		
BT	BUCKET TRAP	EAS	SECURITY DEVICE	HR	HANDRAIL	SFW	SEALED FLOOR WASTE	VRG	VERTICAL RECESSED GROOVE		
BWU	BOILING WATER UNIT	FB	FIXED BOLLARD	HW	HOT WATER	SK	SINK	WC	WATER CLOSET		
CBR	COOLROOM BUFFER RAIL	FG	FIXED GLAZING	HWS	HOT WATER SYSTEM	SSC	SECURITY SCREEN	WG	WANZEL GATE		

NOTES

ALL DIMENSIONS, SIZES, ETC. ARE IN MILLIMETRES. FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING OF DRAWING.
THIS DRAWING TO BE READ IN CONJUNCTION WITH ELECTRICAL, MECHANICAL, HYDRAULIC, DETAIL STANDARD DRAWINGS AND CONSTRUCTION SUMMARY.
ALL PLINTH DIMENSIONS & DETAILS TO BE PROVIDED BY REFRIGERATION CONTRACTOR.
EXTERNAL METALWORK SPECIFIED AS GALVANISED SHALL BE HOT DIPPED GALVANISED TO CONFORM TO AUSTRALIAN STANDARDS.
EXPOSED VENT PIPES WILL NOT BE PERMITTED IN AMENITIES, OFFICES & PREPARATION AREAS.
A FEATHERED EDGE BRASS STRIP SHALL BE PROVIDED AT ALL JUNCTIONS OF VINYL FLOORING AND CONCRETE SLAB, & CERAMIC TILES TO CONCRETE FLOOR.

REV	DATE	COMMENTS	DRN	CHKD	VRFD
P	25 02 2005	PRELIMINARY ISSUE FOR INFORMATION	BDW	KG	
A	28 02 2005	ISSUE FOR INFORMATION	BDW	KG	
B	3.03 2005	ISSUED TO CONSULTANTS	BDW	KG	
C	8.03 2005	ISSUED TO CONSULTANTS	BDW	KG	
D	17.03 2005	WW PV CONSULTANT ISSUE	BDW	KG	
E	24 03 2005	ISSUE FOR COORDINATION	BDW	KG	
F	29 03 2005	ISSUE FOR COORDINATION	BDW	KG	
0	31 03 2005	ISSUE FOR TENDER	BDW	KG	
1	04 04 2005	ISSUE FOR TENDER	BDW	KG	
2	25 08 2005	ISSUED FOR INFORMATION	BDW	KG	
4	18 11 2006	ISSUED FOR CONSTRUCTION CERTIFICATE	RJD	KG	
5	12 10 2006	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING TO SUIT THE CHANGES	MP	KG	
6	08 11 2006	ISSUED FOR TENDER	MP	KG	
7	18 12 2006	ISSUED FOR CONSTRUCTION	MP	KG	
8	02.03. 2007	ISSUED FOR CONSULTANTS	MP	KG	
9	16 03 2007	ISSUED FOR CONSULTANTS	MP	KG	

EJE ARCHITECTURE

[redacted]

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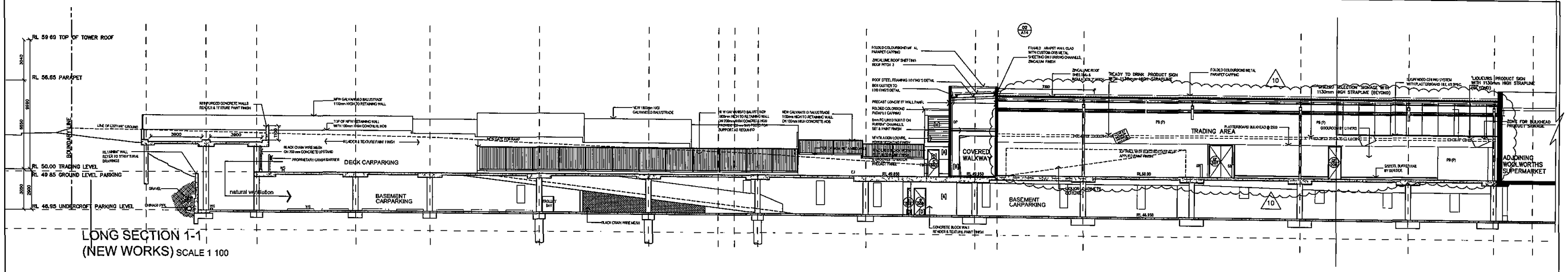
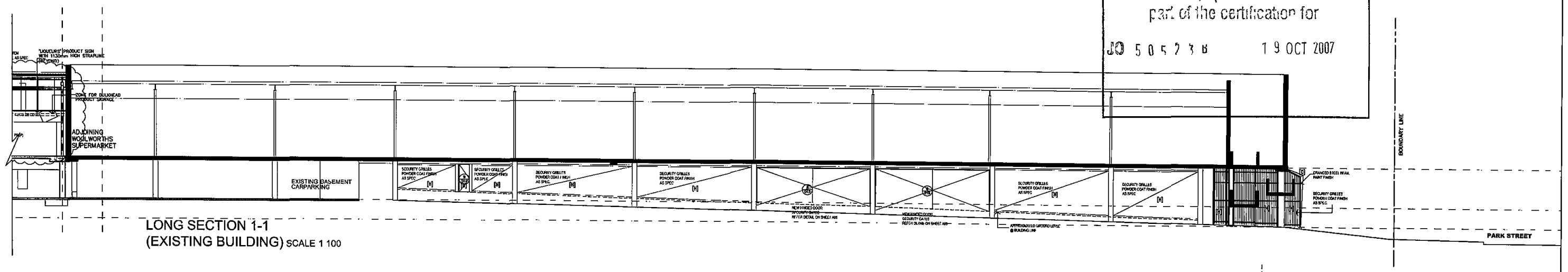
PROJECT: MARKET SQUARE MONA VALE
CNR WARATAH, KEENAN & PARK ST
STORE No 1263

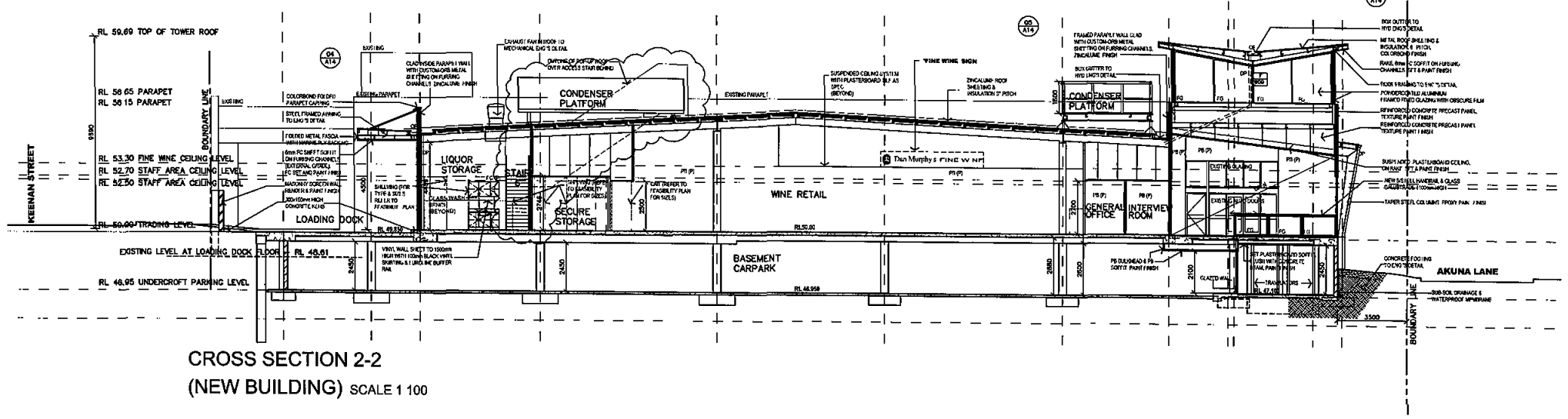
DRAWING		
ELEVATIONS		
DRAWN BY: BDW	SCALE: 1 100 1 50	DRAWING No: A 06
EJE PROJECT NO.: 6429	DATE: FEB 2005	KIT ISSUE: NOV 2003
PROJECT NO.:	CAD :	AMENDMENT No :



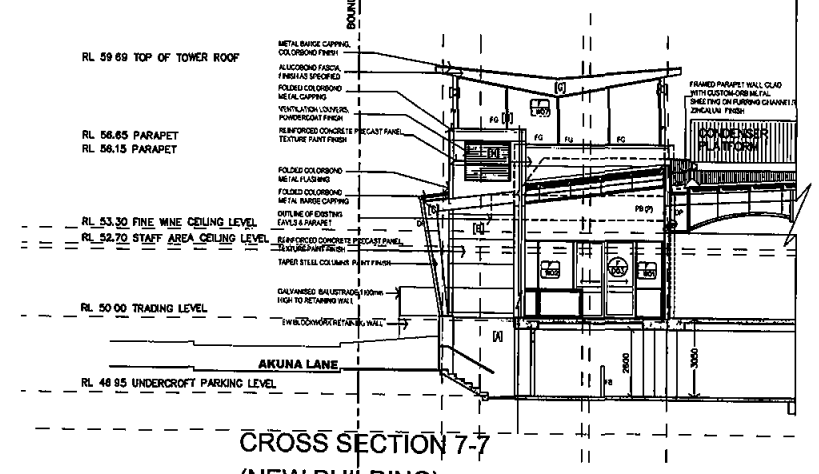
LONG SECTION 1-1
(NEW WORKS) SCALE 1 100



LONG SECTION 1-1
(EXISTING BUILDING) SCALE 1 100



CROSS SECTION 2-2
(NEW BUILDING) SCALE 1 100



CROSS SECTION 7-7
(NEW BUILDING) SCALE 1 100

LEGEND

EXTERNAL COLOUR FINISHES

[A]	GRANITAL PRECAST PANELS WALL & RENDERED WALL COLOUR	TEXTURED PAINT FINISH DULUX "MUD PACK" P14-B4
[B]	PRECAST PANEL, WALL TO ENTRY STATEMENT TOWER	TEXTURED PAINT FINISH DULUX "WESTERN MYALL PG1-F7
[C]	STEEL COLUMNS	PACK EPOXY DULUX RED CROSS P04-H9
[D]	SOLID CORE DOOR & FRAME	GLOSS ENAMEL DULUX "FRONTIER FORT" P11-C3
[E]	AWNING SHEET METAL ROOFING SHUTTER ROLLER DOOR	COLORBOND SHALE GRAY
[G]	ENTRY TOWER ROOF FASCIA & EAVES POWDER COATED ALUCOBOND	DULUX RED CROSS P04-H9
[M]	WINDOW FRAMING, LOUVRE POWDERCOATING & SECURITY GRILLES	POWDERCOAT DULUX APO GRAY(S)

LEGEND

GENERAL

SYMBOL	KEY
BS	BRASS STRIP
BSN	BASIN
BT	BUCKET TRAP
BWU	BOILING WATER UNIT
CBR	COOLROOM BUFFER RAIL

REFER TO DOOR SCHEDULE

CLS	CLEANERS SINK	FE	FIRE EXTINGUISHER	MSB	MAIN SWITCH BOARD
CRP	TIMBER CHAIR RUB RAIL	FHR	FIRE HOSE REEL	OF	OVER FLOW
CW	COLD WATER	FN	HOSE REEL	PB (P)	PLASTERBOARD, PAINT FINISH
DP	DOWNPIPE	FW	FLOOR WASTE	PJ	PRECAST PANEL JOINT
FB	FIXED BOLLARD	GW	GLASS WASHER	RB	REMOVABLE BOLLARD
FC (P)	FIBRE CEMENT PAINT FINISH	HC+	HOT/COLD WATER MIXER	RSD	ROLLER SHUTTER DOOR
FG	FIXED GLAZING	HR	HANDRAIL	SB	STAINLESS STEEL BOLLARD
		HW	HOT WATER	SK	SINK
		HWS	HOT WATER SYSTEM	SSC	SECURITY SCREEN
				ST	STORM WATER
				SW	SEWER
				TBR	TIMBER BUFFER RAIL
				TD	TUNDISH
				UR	URINAL
				VP	VENT PIPE
				VRG	VERTICAL RECESSED GROOVE
				WC	WATER CLOSET
				WS	WHEEL STOP

NOTES

ALL DIMENSIONS, NOTES, SETTING OUT TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF ANY WORK OR SHOP DRAWINGS. ANY DISCREPANCIES TO BE REPORTED TO ARCHITECT BEFORE PROCEEDING WITH WORK.

THIS DRAWING TO BE READ IN CONJUNCTION WITH ELECTRICAL, MECHANICAL, HYDRAULIC, SOILS, STRUCTURAL ENGINEERS AND CONSTRUCTION SUPERVISOR'S DRAWINGS.

ALL FIGURED DIMENSIONS & DETAILS TO BE PROVIDED BY REFRIGERATION CONTRACTOR.

EXTERNAL WORK SHOWN FOR ALL ILLUSTRATIVE PURPOSES ONLY. REFER TO CIVIL ENGINEERS DRAWINGS FOR CONSTRUCTION DETAILS.

FIGURED DIMENSIONS WILL NOT BE PERMITTED IN ARCHITECTS, OFFICES & PROFESSIONAL CONSULTANTS.

ALL PROPOSED WORK SHOWN, SUCH AS, BUT NOT LIMITED TO, FENCES, RETAINING WALLS, PAVING, KERBS, DRAINAGE, ETC. IS INDICATIVE ONLY AND SUBJECT TO COUNCIL APPROVAL & DESIGN.

REV	DATE	COMMENTS	DRN	CHKD	VRFD
P	25 02 2005	PRELIMINARY ISSUE FOR INFORMATION	BDW	KG	
A	28 02 2005	ISSUE FOR INFORMATION	BDW	KG	
D	3 03 2005	ISSUED TO CONSULTANTS	BDW	KG	
C	8 03 2005	ISSUED TO CONSULTANTS	BDW	KG	
D	17 03 2005	WW PV CONSULTANT ISSUE	BDW	KG	
E	24 03 2005	ISSUE FOR COORDINATION	BDW	KG	
F	29 03 2005	ISSUE FOR COORDINATION	BDW	KG	
G	31 03 2005	ISSUED FOR TENDER	BDW	KG	
1	04 04 2005	ISSUE FOR TENDER	BDW	KG	
2	— 2005	ISSUE FOR TENDER	BDW	KC	

REV	DATE	COMMENTS	DRN	CHKD	VRFD
4	18 11 2005	ISSUED FOR CONSTRUCTION CERTIFICATE	RJD	KG	
5	12 12 2005	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING TO SUIT THE CHANGES	MP	KG	
6	09 11 2006	ISSUED FOR TENDER	MP	KG	
7	18 12 2006	ISSUED FOR CONSTRUCTION CERTIFICATE	MP	KG	
8	12 01 2007	ISSUED FOR CONSTRUCTION	MP	KG	
9	02 02 2007	ISSUED FOR CONSULTANTS	MP	KG	
10	16 03 2007	ISSUED FOR CONSULTANTS	MP	KG	

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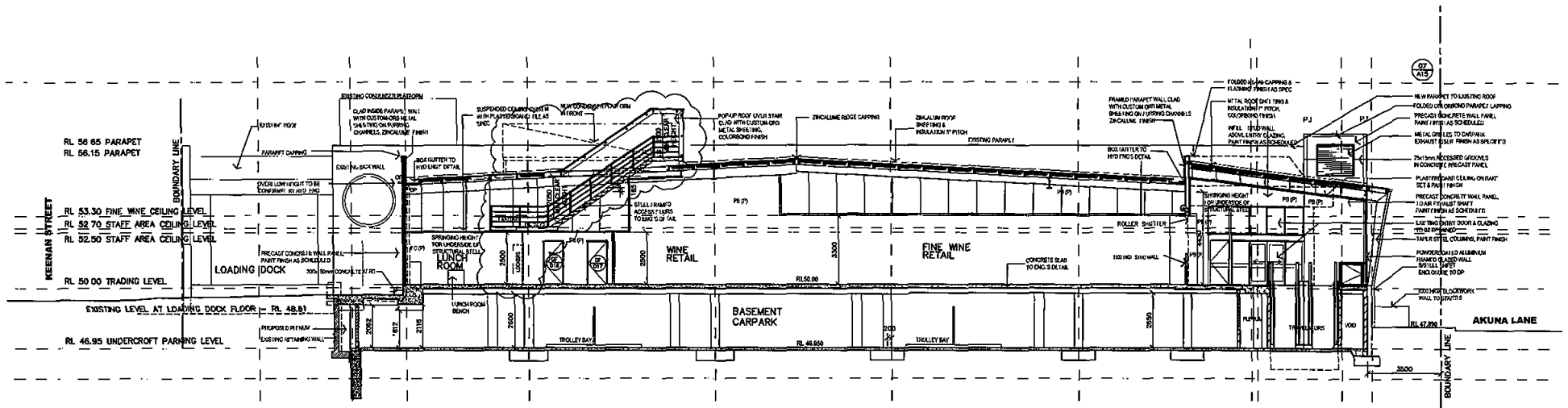
PROJECT : MARKET SQUARE MONA VALE
CNR WARATAH, KEENAN & PARK ST
STORE NI 1263

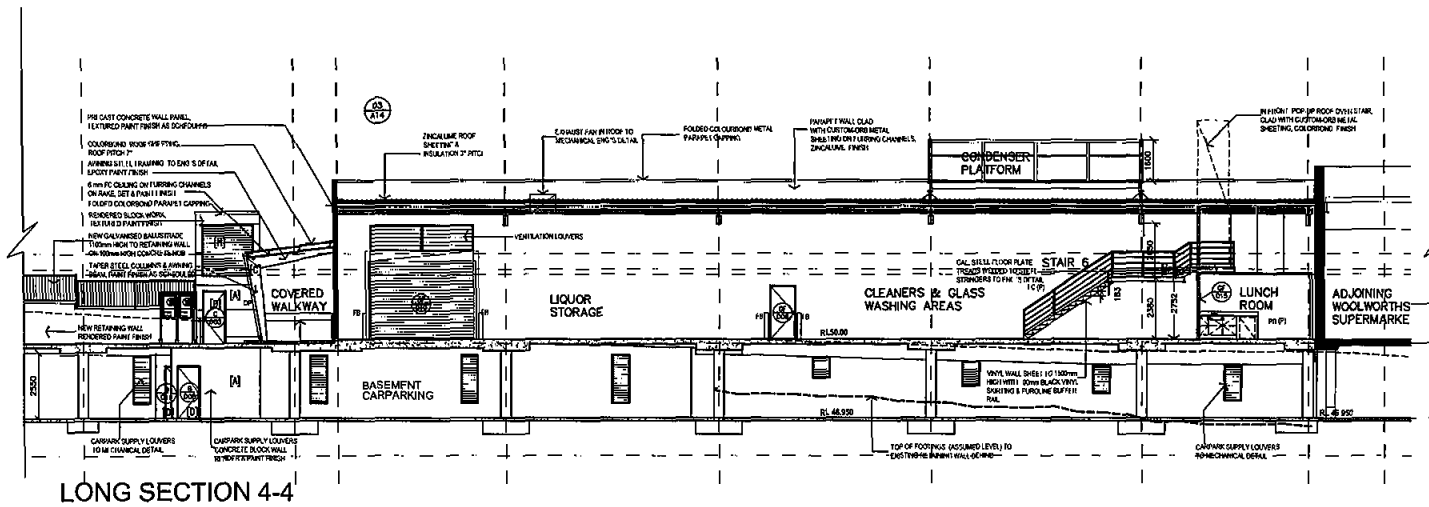
DRAWING : SECTIONS

DRAWN BY : BDW	SCALE : 1 100	DRAWING No : A 07	
EJE PROJECT NO. : 6429	DATE : FEB 2005	WP ISSUE : NOV 2003	
PROJECT NO. :	CAD FILE :	AMENDMENT NO :	



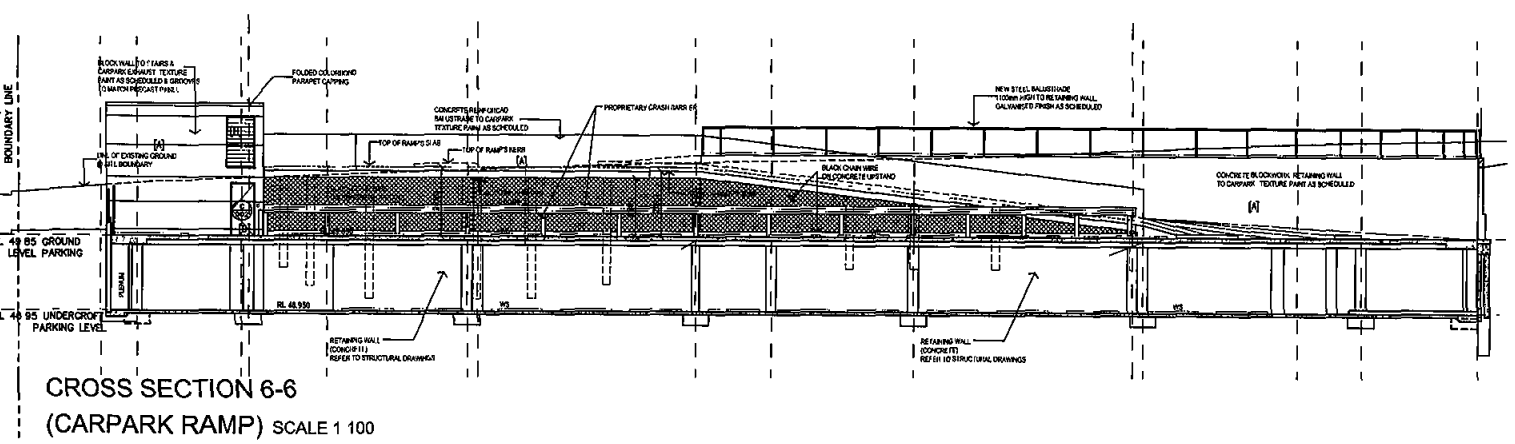
CROSS SECTION 3-3
(NEW BUILDING) SCALE 1 100

PART OF SECTION 3 3
(NEW STAIRS IN DAN MURPHY'S)
SCALE 1 100

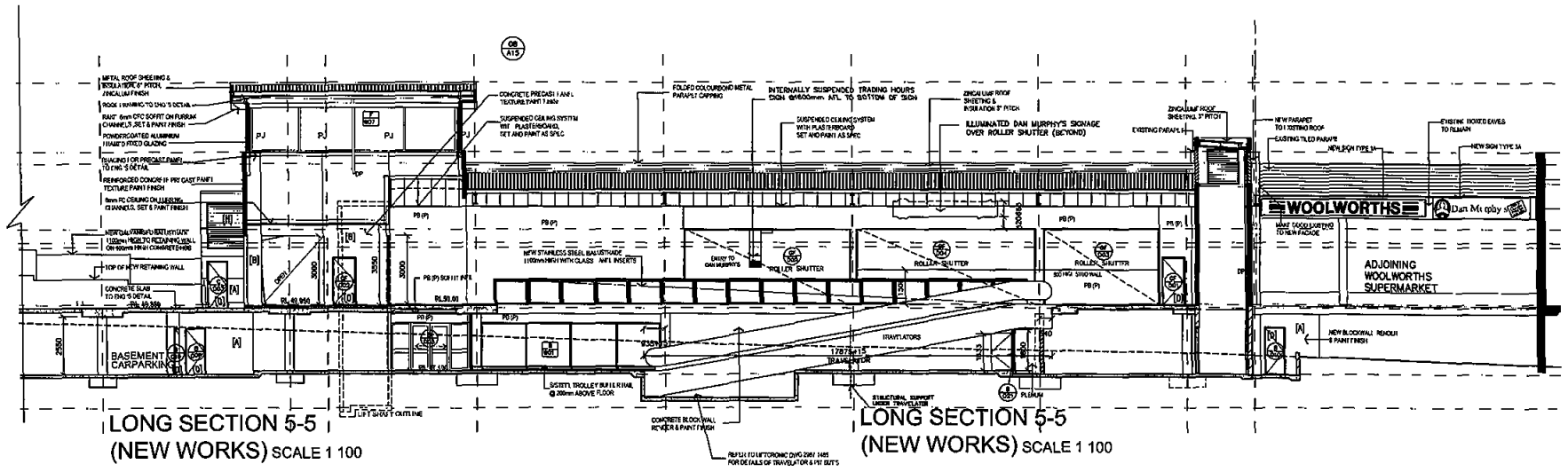


LONG SECTION 4-4
(NEW WORKS) SCALE 1 100

PART OF SECTION 4-4
(NEW STAIRS IN DAN MURPHY'S)

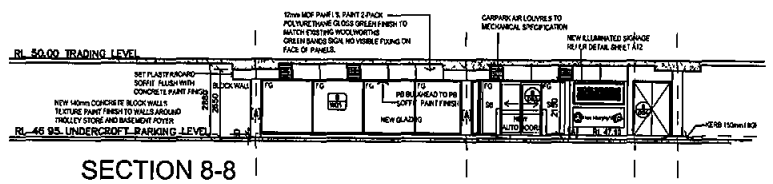


CROSS SECTION 6-6
(CARPARK RAMP) SCALE 1 100



LONG SECTION 5-5
(NEW WORKS) SCALE 1 100

LONG SECTION 5-5
(NEW WORKS) SCALE 1 100



SECTION 8-8
(BASEMENT ENTRY) SCALE 1 100

LEGEND									
GENERAL		CLS	CLEANERS SINK	FE	FIRE EXTINGUISHER	MSB	MAIN SWITCH BOARD	ST	STORM WATER
		CRP	TIMBER CHAIR RUB RAIL	FHR	FIRE HOSE REEL	OF	OVER FLOW	SW	SEWER
		CW	COLD WATER	FH	HOSE REEL	PB (P)	PLASTERBOARD, PAINT FINISH	TBR	TIMBER BUFFER RAIL
SYMBOL	KEY	(6)	REFER TO DOOR SCHEDULE	FW	FLOOR WASTE	PJ	PRECAST PANEL JOINT	TD	TUNDISH
BS	BRASS STRIP			GW	GLASS WASHER	RB	REMOVABLE BOLLARD	UR	URINAL
BSN	BASIN	DP	DOWNPIPE	HC+	HOT/COLD WATER MIXER	RSD	ROLLER SHUTTER DOOR	VP	VENT PIPE
BT	BUCKET TRAP	FB	FIXED BOLLARD	HR	HANDRAIL	SB	STAINLESS STEEL BOLLARD	VRG	VERTICAL RECESSED GROOVE
BWU	BOILING WATER UNIT	FC (P)	FIBRE CEMENT PAINT FINISH	HW	HOT WATER	SK	SINK	WC	WATER CLOSET
CBR	COOLROOM BUFFER RAIL	FG	FIXED GLAZING	HWS	HOT WATER SYSTEM	SSC	SECURITY SCREEN	WS	WHEEL STOP

LEGEND		
EXTERNAL COLOUR FINISHES		
[A]	GENERAL PRECAST PANELS WALL & RENDERED WALL COLOUR	TEXTURED PAINT FINISH DULUX MUD PACK' P14-B4
[B]	PRECAST PANEL WALL TO ENTRY STATEMENT TOWER	TEXTURED PAINT FINISH DULUX 'WESTERN MYALL P01-F7
[C]	STEEL COLUMNS	PACK EPOXY DULUX RED CROSS P04-H9
[D]	SOLID CORE DOOR & FRAME	GLOSS ENAMEL DULUX 'FRONTIER FORT' P11-C3
[E]	AWNING SHEET METAL ROOFING, SHUTTER ROLLER DOOR	COLORBOND SHALE GRAY'
[F]	ENTRY TOWER ROOF, FASCIA & EAVES POWDER COATED ALUCOBOND	DULUX RED CROSS P04-H9
[H]	WINDOW FRAMING LOUVRE POWDERCOATING & SECURITY GRILLES	POWDERCOAT DULUX APO GRAY(S)

NOTES

REV	DATE	COMMENTS	DWN	CHKD	VRFD
P	25 02 2005	PRELIMINARY ISSUE FOR INFORMATION	BDW	KG	
A	28 02 2005	ISSUE FOR INFORMATION	BDW	KG	
B	3 03 2005	ISSUED TO CONSULTANT'	BDW	KG	
C	8 03 2005	ISSUED TO CONSULTANT'	BDW	KG	
D	17 03 2005	WW PV CONSULTANT ISSUE	BDW	KG	
E	24 03 2005	ISSUE FOR COORDINATION	BDW	KG	
F	29 03 2005	ISSUE FOR COORDINATION	BDW	KG	
G	31 03 2005	ISSUE FOR TENDER	BDW	KG	
1	04 04 2005	ISSUE FOR TENDER	BDW	KG	
2	--2005	ISSUE FOR TENDER	BDW	KG	

RE	DATE	COMMENTS	DWN	CHKD	VRFD
4	18 11 2005	ISSUED FOR CONSTRUCTION CERTIFICATE	BJD	KG	
5	12 10 2006	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING TO SUIT THE CHANGES	MP	KG	
6	20 11 2006	ISSUED FOR TENDER	MP	KG	
7	15 12 2006	ISSUED FOR CONSTRUCTION CERTIFICATE	MP	KG	
8	12 04 2007	ISSUED FOR CONSTRUCTION	MP	KG	
9	02 05 2007	1000 KG FOR SCHEDULE'	MP	KG	
10	16 01 2007	ISSUED FOR CONSULTANT'	MP	KG	
11	16 03 2007	AMENDMENT TO TRAVELATOR	MP	KG	

EVE ARCHITECTURE

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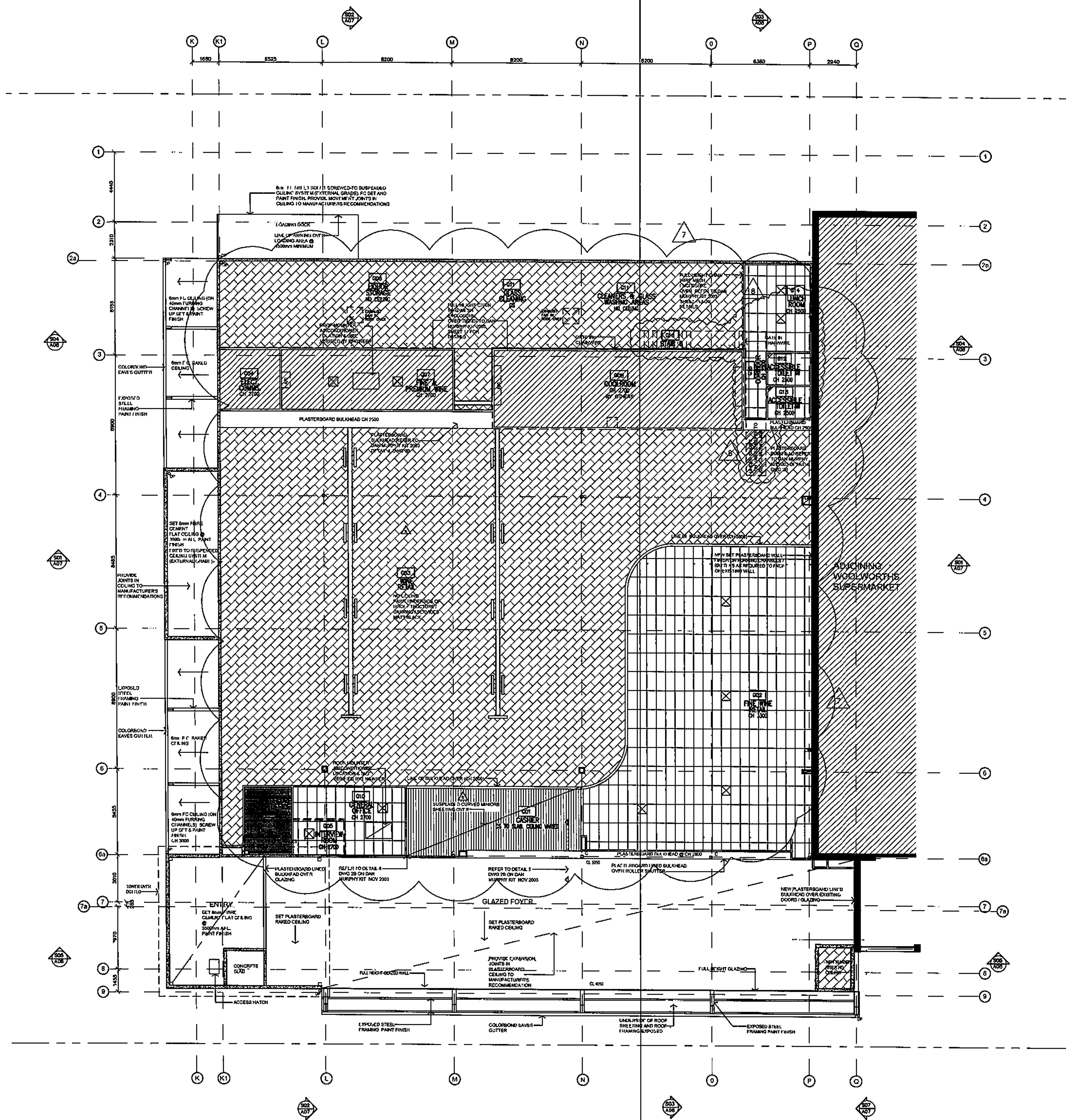
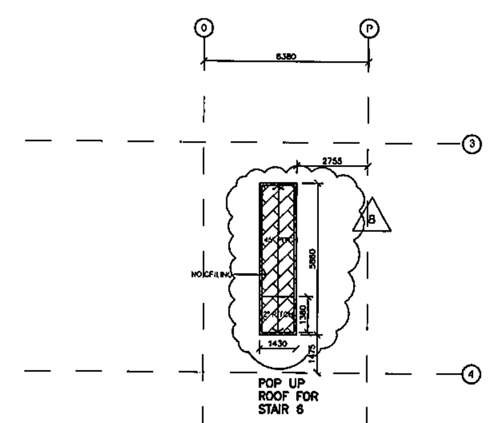
PROJECT
MARKET SQUARE MONA VALE
CNR WARATAH, KEENAN & PARK ST
STORE NT 1263

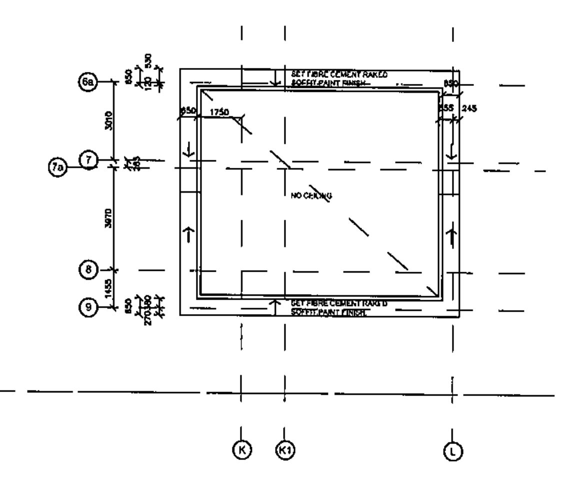
DRAWING
SECTIONS

DRAWN BY	SCALE	TRANSMIT No
BDW	1 100	A 08
EVE PROJECT NO.	DATE	KEY ISSUE :
6429	FEB 2005	NOV 2003
PROJECT NO.	CAD :	AMENDMENT No :



GROUND REFLECTED CEILING PLAN SCALE 1 100





TOWER REFLECTED CEILING PLAN SCALE 1 100

This Plan/Specification forms part of the certification for

JO 5 0 5 2 4 D 19 OCT 2007

LEGEND

CEILING FINISHES

WINE RETAIL	WINE RETAIL NO CEILING UNDERSIDE OF FOIL INSULATION EXPOSED STRUCTURE AND SERVICES ITEMS TO BE PAINTED MATT BLACK
FINE WINE RETAIL	FINE WINE CEILING 1200x600mm BORAL PLASTERBOARD SUSPENDED CEILING PANELS ON EXPOSED T-BAR SYSTEM. FINISH TO GRID & TILES TO MATCH DULUX GRASS BLADE No P22 B8
CHECKOUT	FRONT END/CHECKOUT AREA SUSPENDED CURVED ZINCALUME MINIORB SHEETING TO CEILING CLEAR FINISH
	OFFICES, LUNCH ROOM & AMENITIES 1200x600mm WHITE VINYL FINISHED PLASTERBOARD TILES ON EXPOSED T-BAR SUSPENSION SYSTEM GRID TO BE WHITE
	SECURE OFFICE CEILING FIXED FLUSH FINISHED 13mm PLASTERBOARD ON TIMBER OR METAL JOISTS REINFORCED WITH GALVANISED SHEET METAL (MIN THICKNESS 0 75mm) LOW SHEEN PAINT FINISH
	COOLROOM & WINE STORES INSULATED CEILINGS TO COOLROOM & WINE STORES BY BUILDER
	NO CEILING AREAS EXPOSED FOIL FACED INSULATION AND SARKING TO UNDERSIDE OF ROOF
	CASHIER AREAS SUSPENDED CURVED MINIORB SHEETING

LEGEND

WALL CONSTRUCTION TYPES

	NEW CONCRETE BLOCK WALL
	NEW REINFORCED PRECAST CONCRETE COMPONENTS TO ENG'S DETAIL
	NEW ACOUSTIC WALL TO DETAIL
	NEW 90mm STUD WALL, UNLESS STATED OTHERWISE
	NEW 100mm COOLROOM PANELS
	CHAIN WIRE MESH REFER TO DAN MURPHY KIT 2003 DWG 11

NOTE
1 BUILDER TO ALLOW FOR ANY NECESSARY TRIMMING & CUTTING OF CEILINGS FOR ALL LIGHT FITTINGS & MECHANICAL REGISTERS AS REQUIRED BY ELECTRICAL/ MECHANICAL SUBCONTRACTORS (REFER TO ELECTRICAL / MECHANICAL LAYOUT PLANS

2 CEILING SUSPENSION SYSTEM TO ALLOW FOR SUSPENSION FRAMING TO BE HUNG FROM ROOF PURLINS @ 1500mm CENTRES

NOTES

REV	DATE	COMMENTS	DRN	CHKD
A	28.02.2005	ISSUE FOR INFORMATION	JMM	KG
B	03.03.2005	CONSULTANT ISSUE	JMM	KG
C	08.03.2005	CONSULTANT ISSUE	JMM	KG
D	17.03.2005	WW PV CONSULTANT ISSUE	JMM	KG
E	24.03.2005	ISSUED FOR CO ORDINATION	JMM	KG
1	21.04.2005	TENDER ISSUE	RJD	KT
1	04.04.2005	ISSUED FOR TENDER	RJD	KG
2	-- 2005	ISSUED FOR TENDER	BDW	KG

REV	DAT	COMMENTS	DRN	CHKD
4	18 11 2005	ISSUED FOR CONSTRUCTION CERTIFICATE	RJD	KG
5	08 11 2006	ISSUED FOR TENDER	RJD	KG
6	18 12 2006	ISSUED FOR CONSTRUCTION	MP	KG
7	02.03 2007	ISSUED FOR CONSULTANTS	MP	KG
8	16.03 2007	ISSUED FOR CONSULTANTS	MP	KG

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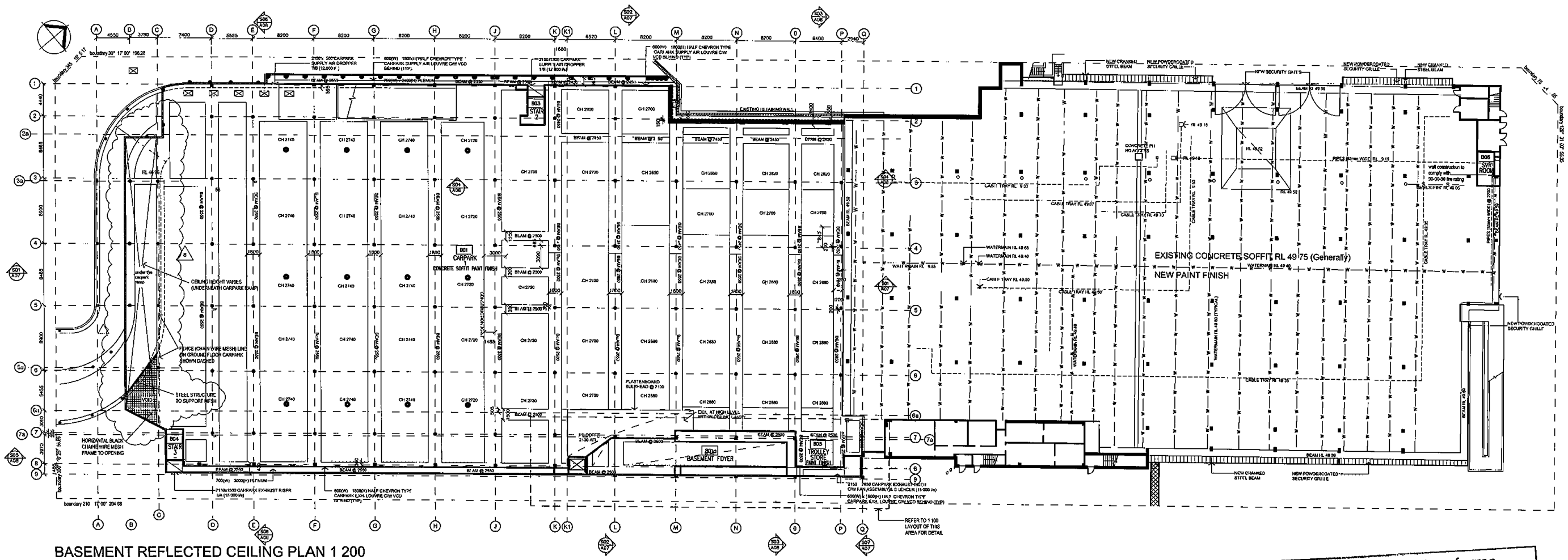
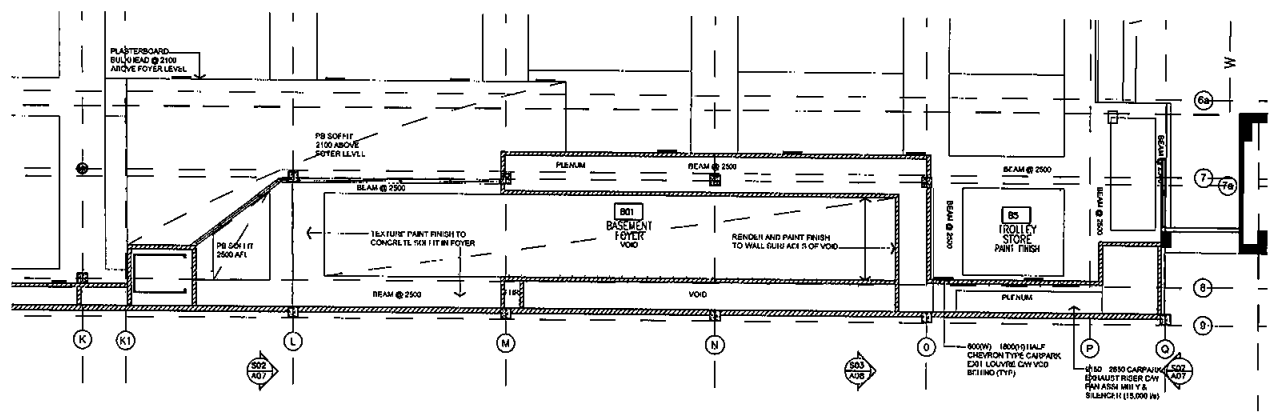
PROJECT : MONA VALE MARKET SQUARE
CNR WARATAH, KEENAN & PARK ST
STORE No 1263

DRAWING : NEW GROUND FLOOR REFLECTED CEILING PLAN

DRAWN BY :	SCALE :	DRAWING No :
JMM	1 100	A09
EJE PROJECT NO:	DATE :	KIT ISSUE :
6429	APRIL 2005	NOV 2003
PROJECT NO:	CAD	AMENDMENT No :
--	AutoCAD 2004	8



BASEMENT REFLECTED CEILING PLAN 1 200



PART BASEMENT REFLECTED CEILING PLAN 1 100

This Plan/Specification forms part of the certification for

JO 5052x8 19 OCT 2007

NOTES

ALL DIMENSIONS, SIZES, ETC ARE AS VALIDATED. FIGURED DIMENSIONS TO BE USED IN PREFERENCE TO SCALING OF DRAWING.

THIS DRAWING TO BE READ IN CONJUNCTION WITH ELECTRICAL, MECHANICAL, HYDRAULIC, RETAIL STANDARD DRAWINGS AND CONSTRUCTION SUMMARY.

ALL PLANTH DIMENSIONS & DETAILS TO BE PROVIDED BY REFRIGERATION CONTRACTOR.

EXTERNAL MECHANICAL ASPECTED AS GALVANISED SHALL BE HOT DIPPED GALVANISED TO CONFORM TO AUSTRALIAN STANDARDS.

RECESSED VENT BOXES WILL NOT BE PERMITTED IN ARCHITRAVES, OFFICES & PREPARATION AREAS.

ALL FEATHERED EDGE BRICKS STONE SHALL BE PROVIDED AT ALL JUNCTIONS OF WALLS, FLOORS AND CONCRETE SLAB, & CERAMIC TILES TO CONCRETE FLOOR.

RE	DATE	COMMENTS	DR	CHKD	VRFD
A	28 02 2005	ISSUE FOR INFORMATION	JMM	KG	
B	03 03 2005	CONSULTANT ISSUE	JMM	KG	
C	08 03 2005	CONSULTANT ISSUE	JMM	KG	
D	17 03 2005	WW PV CONSULTANT ISSUE	JMM	KG	
E	24 03 2005	ISSUD P FOR CO-ORDINATION	JMM	KG	
F	29 03 2005	ISSUED FOR CO-ORDINATION	JMM	KG	
G	31 03 2005	TENDER ISSUE	JMM	KG	
1	05 04 2005	TENDER ISSUE	RJD	KG	
2	— 2005	TENDER ISSUE	RJD	KG	

RE	DATE	COMMENTS	DRN	CHKD	VRFD
4	18 11 2005	ISSUED FOR CONSTRUCTION CERTIFICATE	RJD	KG	
5	12 10 2006	NEW RAMP LAYOUT TO LOWER LEVEL & CARPARKING TO SUIT THE LIVINGS	MP	KG	
6	06 11 2006	ISSUED FOR TENDERS	MP	KG	
7	18 12 2006	ISSUED FOR CONSTRUCTION CERTIFICATE	MP	KG	
8	12 01 2007	ISSUED FOR CONSTRUCTION	MP	KG	

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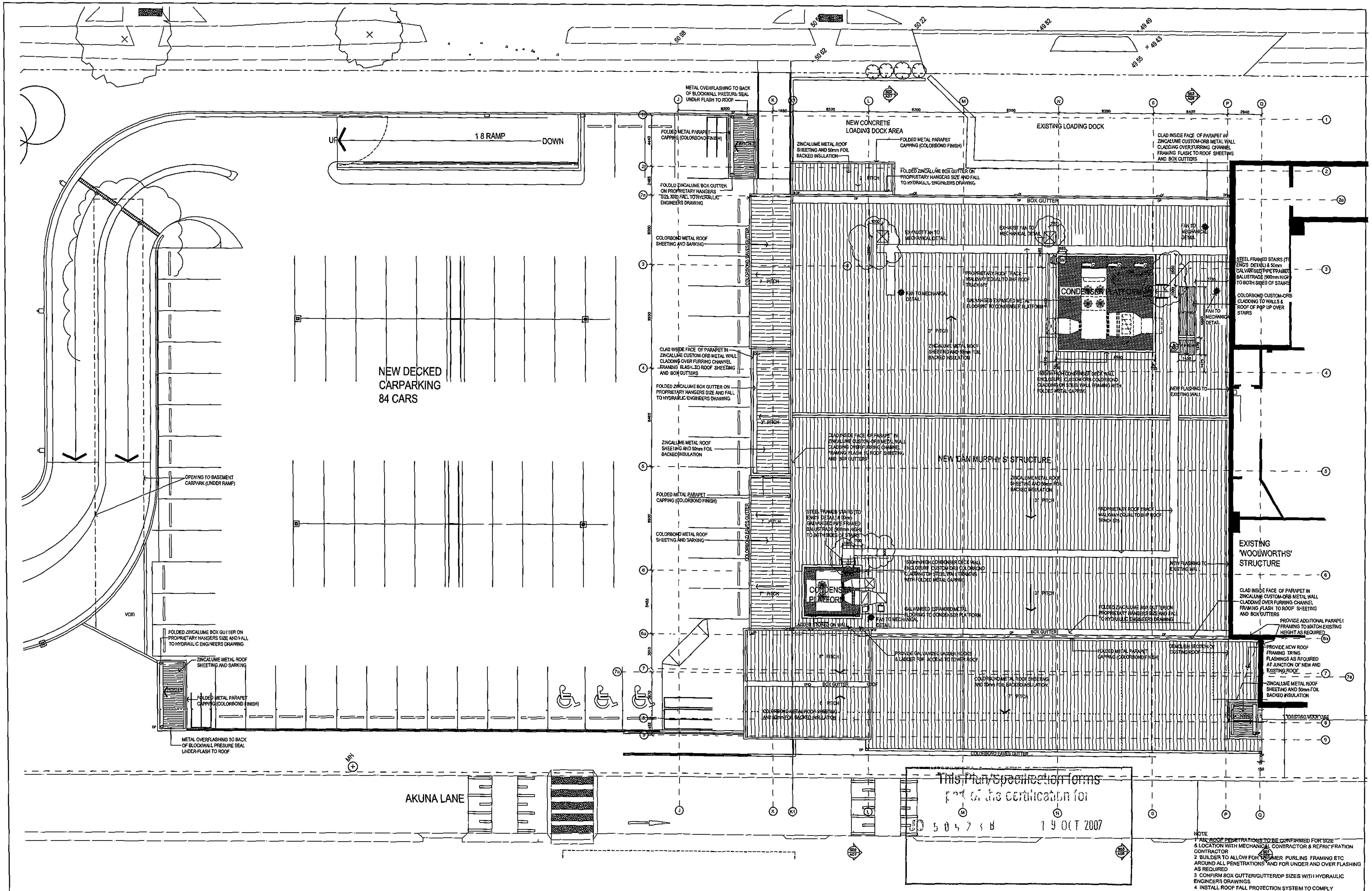
PROJECT	MONA VALE MARKET SQUARE CNR WARATAH, KEENAN & PARK ST STORE NI 1263
DRAWING	BASEMENT REFLECTED CEILING PLAN
DRAWN BY	JMM
SCALE	1 200
DRAWING N	A10
EJE PROJECT NO.	6429
DATE	FEB 2005
KIT ISSUE	Nov 2003
PROJECT NO.	—
CAD	A-toCAD 2004
AMENDMENT No	8



NOTE
1 ALL ROOF PENETRATIONS TO BE CONFIRMED FOR SIZE & LOCATION WITH MECHANICAL CONTRACTOR & REFRIGERATION CONTRACTOR
2 BUILDER TO ALLOW FOR TRIMMER PURLINS FRAMING ETC AROUND ALL PENETRATIONS AND FOR UNDER AND OVER FLASHING AS REQUIRED
3 CONFIRM BOX GUTTER/GUTTER/DP SIZES WITH HYDRAULIC ENGINEERS DRAWINGS
4 INSTALL ROOF FALL PROTECTION SYSTEM TO COMPLY WITH AS/NZS 1891 PART 4 AND WORKCOVER CODES OF PRACTICE SAFE WORK ON ROOFS

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Newcastle NSW 2300
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PROJECT
MONA VALE MARKET SQUARE
CNR WARATAH, KEENAN & PARK ST
STORE No 1263

DRAWING: ROOF PLAN

DRAWN BY	SCALE	DRAWING No
RJD	1 100	A11
EJE PROJECT NO.	DATE	KIT ISSUE
6429	APR 2005	NOV 2003

NA VALE MARKLT SQUARE - REVISED RAMP
YOUT
OUND FLOOR PLAN

NOTES

1 ALL STORMWATER DOWNPIPES SHALL OFFSET AT HIGH LEVEL IN CARPARK BELOW OFFSET DOWNPIPES WITHIN BEAM SPACE DROP UNDER BEAM IMMEDIATELY ADJACENT TO COLUMN UNLESS OTHERWISE NOTED

2 ALLOW TO SEAL & REMOVE ALL REDUNDANT STORMWATER DRAINAGE

3 ALL STORMWATER DRAINAGE SHALL BE INSTALLED TO MEET AS/NZS 3500 3:2003 AND LOCAL AUTHORITY REQUIREMENTS

4 ALL STORMWATER MATERIALS EG. SYPHONIC DRAINAGE PIPE PITS & GRATES SHALL BE INSTALLED TO MANUFACTURERS & AS/NZS 3500 3 REQUIREMENTS.

5 ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH CIVIL SPECIFICATION AND LATEST AMENDMENT OF ANY RELEVANT AUSTRALIA/NEW ZEALAND STANDARDS

This Plan/Specification forms part of the certification for

JO 5 0 5 2 3 3 19 OCT 2007

DATE	No	AMENDMENT	INIT	ISSUE
14 12 04		ISSUED FOR DA	HZ	A
17 12 04		ISSUED FOR DA	HZ	B
17 8 05		ISSUED FOR TENDER	JR	C
8 04 05		STORMWATER REVISED/CHKD	LN	D
16 11 05		ISSUED FOR TENDER AND CONSTRUCTION CERTIFICATE	LN	E
24 10 06		ISSUED FOR CONSTRUCTION CERTIFICATE	HZ	F
06 11 06	1	ARCH UPDATED	ASJ	

DATE	No	AMENDMENT	INIT	ISSUE
16.11.06		DRAINAGE REVISED TO SUIT LATEST ARCH.		
23.07.07	2	PIT RELOCATED RL's REVISED	HZ	G
	3	GRATE DELETED	LN	H
	4	SWS ADDED		
	5	CP LEVEL DROP 100mm		
26.07.07		CONSTRUCTION ISSUE	AL	

SCALE 1 200

SPARKS AND PARTNERS

PROJECT	DAN MURPHY 25 PARK STREET MONA VALE NSW
CLIENT	WOOLWORTHS LIMITED
TITLE	HYDRAULIC SERVICES GROUND FLOOR PLAN
DESIGNED BY / CHKD	CMcV
CHECKED BY	
DATE	23 11 06
SCALE	1 200
DRAWN BY	HZ
DATE	NOV 2006
JOB NO	04061
DRAWING No	C 03
No. IN SET	
ISSUE	