COMMERCIAL KITCHEN EXHAUST SYSTEMS:

A Practical Guide to Grease Management and Fire Risk Reduction

Summary Best Practice Guide (BPG)	Prepared and Presented by
Source: Australian Institute of Refrigeration, Air Conditioning and Heating - Best Practice Guide (BPG) for Commercial Kitchen Exhaust Management	Lotus Commerical

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Overview

Who is this guide for?

This guide is for commercial kitchen operators, facility managers, and compliance professionals responsible for managing kitchen exhaust systems. It distils the key principles of the AIRAH Best Practice Guide (BPG) for Commercial Kitchen Exhaust Management into a practical, easy-to-use format.

Why was the BPG developed?

AS 1851 does not reflect the operational realities of modern kitchens, the BPG introduces a smarter, risk-based alternative grounded in grease measurement, system design, and evidence-based scheduling.

Why use it?

While compliance with the BPG is not mandatory, it represents best practice in fire risk management. Implementing its principles helps operators reduce risk, support defensible decision-making, and meet rising expectations from insurers, landlords, and regulators. For multi-site operators, it offers a consistent, scalable approach to safety and compliance.

About Lotus Commercial

Lotus Commercial (Lotus) is Australia's leading provider of commercial kitchen exhaust and filter cleaning services. With a national footprint and a client base that includes many of the country's largest hospitality operators, Lotus supports venues of all sizes in managing fire risk, compliance, and system performance.

Lotus Commercial played a foundational role in the creation and promotion of the AIRAH Best Practice Guide (BPG), drawing on years of industry experience and operational insight. Lotus Commercial has long recognised the limitations of AS 1851and has championed evidence-based, risk-adjusted cleaning approaches to improve safety and consistency across the sector.

By aligning service delivery with the BPG, Lotus Commercial helps clients implement smarter maintenance systems, meet the expectations of insurers and landlords, and reduce operational and reputational risk. For multi-site operators, Lotus supports the rollout of standardised programs with clear KPIs and defensible documentation.

To learn more or begin implementing the BPG at your venue, contact Lotus Commercial on **1300 653 536,** email **enquiries@lotuscommercial.com.au** or visit **www.lotuscommercial.com.au**

Introduction

Commercial kitchen exhaust systems are essential to the safe, compliant operation of hospitality venues. Yet maintenance practices across the industry are often inconsistent or inadequate. According to Fire and Rescue New South Wales (FRNSW), kitchen fires linked to poorly maintained exhaust systems occur roughly once a week - posing serious risks to people, property, and business continuity.

For many years, Australian Standard AS 1851 has guided kitchen exhaust maintenance through fixed inspection and cleaning intervals. However, this rigid model fails to account for real-world variation in cooking intensity, exhaust design and system performance. Some venues are over-serviced at unnecessary cost; others are under-serviced and exposed to excessive risk.

Modern kitchens often use high-temperature cooking methods such as charbroiling, grilling, and solid fuel cooking - all of which release different types and volumes of airborne grease. These conditions demand a more tailored, risk-adjusted approach to system maintenance.

In response, the Australian Institute of Refrigeration, Air Conditioning, and Heating (AIRAH) developed the Best Practice Guide for Commercial Kitchen Exhaust Management (BPG). Building on international benchmarks such as the UK's TR19 Grease and the US NFPA 96, the BPG provides a flexible, evidence-based framework that reflects operational realities.

Key features include:

- Cleaning schedules based on measured grease accumulation
- Clear thresholds for intervention (e.g. 0.2 mm average grease thickness or 2.0mm localised)
- Practical guidance on system accessibility, inspection points, and documentation

For facilities managers, venue operators, and compliance teams, the BPG is a tool for improving safety, controlling cost, and meeting rising expectations from insurers, landlords, and regulators.

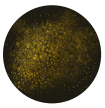
Understanding the Fire Risk

Grease accumulation is an inevitable by-product of commercial cooking. While often seen as a housekeeping issue, airborne grease is a potent fire hazard. When combined with heat and oxygen - both plentiful in commercial kitchens - it completes the fire triangle and creates the conditions for rapid fire spread through the exhaust system.

How Grease Becomes Airborne

When fats and oils are heated, they break down into airborne particles and vapour. These are drawn into the exhaust system and can be categorised as:

SPATTER: Large droplets that settle near the cookline and pose minimal exhaust risk.

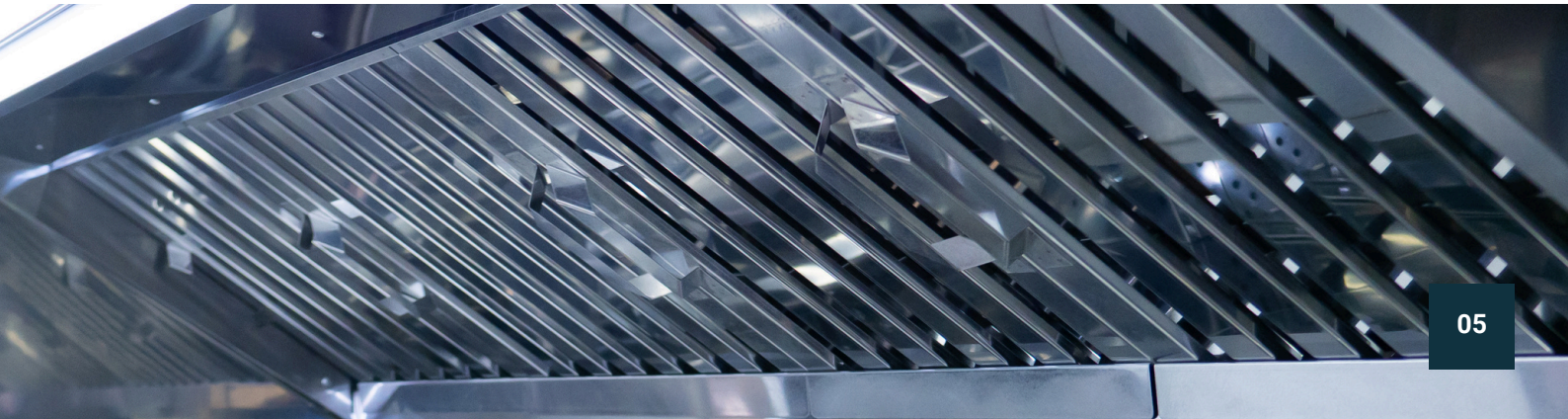


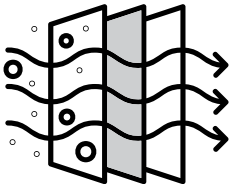
MIST: Medium-sized particles (0.5–10 microns) that remain airborne and enter the exhaust system.

AEROSOLISED GREASE: Ultrafine particles (<1 micron) that bypass filters and deposit deep within the system.

GREASE VAPOUR: UI Invisible gases that condense into sticky residue on duct surfaces.

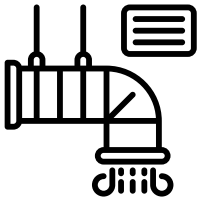
While spatter is managed through surface cleaning, mist, aerosol, and vapour require capture and control within the exhaust system.





Grease Filters - The First Line of Defence

Grease filters are a critical first line of defence in managing airborne grease and reducing fire risk in commercial kitchens. The two most common types - baffle filters and honeycomb filters - capture 80–95% of grease particles before they enter the ductwork. Baffle filters are durable and effective in most environments, while honeycomb filters provide higher capture efficiency but require more frequent cleaning. Regardless of type, clogged filters restrict airflow and filter performance drops quickly when maintenance is neglected.



Where Grease Accumulates

Grease that passes through filters enters the ductwork and settles in areas of reduced airflow. Horizontal runs, bends, and fan blades are especially prone. Accumulation is rarely even, with hotspots forming near heat sources and areas of turbulence. Without timely cleaning, these deposits form a continuous fuel layer, significantly increasing fire risk.

Some grease is expelled externally through the fan and settles on rooftops, introducing secondary hazards such as slip risk, surface degradation, and environmental compliance issues.

Grease Accumulation and Risk Thresholds

Grease that escapes filtration builds up on the internal surfaces of kitchen exhaust systems. Over time, this creates a flammable layer that can accelerate the spread of fire. Understanding when grease accumulation becomes unsafe is central to effective risk management.

Why 0.2 mm Matters

The Best Practice Guide sets a maximum allowable average grease thickness of 0.2 mm across the system. This is the point at which grease ceases to be residue and becomes a continuous fuel layer. Once ignited, it enables flames to rapidly travel through ductwork, increasing fire intensity and spreading ignition risk to fans and rooftop areas.

Grease rarely accumulates evenly. Factors like airflow, gravity, and duct geometry mean that hotspots form - especially at bends, horizontal runs, and near cooking appliances. These areas often exceed safe thresholds faster than others.

International Benchmarks

The BPG's 0.2 mm standard reflects Australia's unique risk profile, where fire suppression systems are not mandatory in all kitchens. By contrast:

- NFPA 96 (USA) allows up to 0.8 mm but assumes suppression systems are in place.
- TR19 (UK) sets limits of an average grease thickness of 0.2 mm and 0.5mm at any single point

How Quickly Can Thresholds Be Exceeded?

Even in well-maintained systems, grease can accumulate quickly. For example, a system receiving 600g of airborne grease per week across 14.4 m² of duct surface will exceed the 0.2 mm threshold in under five weeks. Some sections - especially those with poor airflow - may reach critical levels even sooner. For a more detailed analysis, please contact Lotus and request a copy of the most recent case study.

The Role of Measurement

The average 0.2 mm threshold provides a clear, measurable trigger for cleaning. By regularly checking grease thickness at key locations, operators can maintain safe conditions, avoid guesswork, and document proactive maintenance.

The Evidence-Based Cleaning Schedule

The *Best Practice Guide* promotes a smarter model: cleaning based on actual grease accumulation.

Measuring Grease Accumulation
Grease thickness can be measured easily using calibrated gauges or digital tools. The BPG defines two key thresholds:

- Routine Cleaning Trigger: 0.2 mm average grease thickness
- Urgent Cleaning Threshold: 2.0 mm at any single location

To track this, establish **5–7 sample points** per system, including:

- Inside the canopy or plenum
- At duct entry points
- Every 3 metres in horizontal runs
- Before and after bends
- At least one vertical segment

These locations must be accessible and clearly marked.

Recording and Interpreting Data
Initial readings establish a baseline. Ongoing measurements - monthly at first, then adjusted—reveal how quickly grease builds up. Logs should capture:

- Date and location
- Measured thickness
- Relevant notes (e.g. menu changes, seasonal load)

Digital systems make it easier to track patterns, share reports, and manage multi-site compliance.

Why It Matters
This approach reduces cost, improves safety, and ensures operators can justify their maintenance decisions to auditors, landlords, and insurers. It transforms cleaning from a routine chore into a data-driven risk control strategy.

Designing for Access and Safety

Even the best cleaning plan will fail if parts of the exhaust system are physically inaccessible. Poor design, obstructed ductwork, and unsafe roof access are common barriers that limit proper maintenance and increase fire risk.

Common Access Issues

Many systems were not designed with long-term cleaning in mind. Problems include:

- Too few access hatches
- Poorly located access panels
- Obstructions from structural elements or services
- Sharp bends and duct transitions that trap grease
- Legacy systems that don't meet current standards

These issues prevent full system cleaning and leave critical areas vulnerable.

Best Practice Access Panels Placement

The BPG recommends:

- Access panels every 3 metres
- Access panels at every bend, intersection, and transition
- Access panels that are safe, visible, and appropriately sized

If services block access, minor modifications may be required to enable safe inspection and cleaning.

Cross-Tenancy and Shared Systems

When ductwork passes between tenancies or buildings, access agreements must be negotiated and maintenance schedules should account for required permissions.

Without formal, structured arrangements, cleaning may be incomplete - leaving sections non-compliant and at risk.

Rooftop Access and HSE Compliance

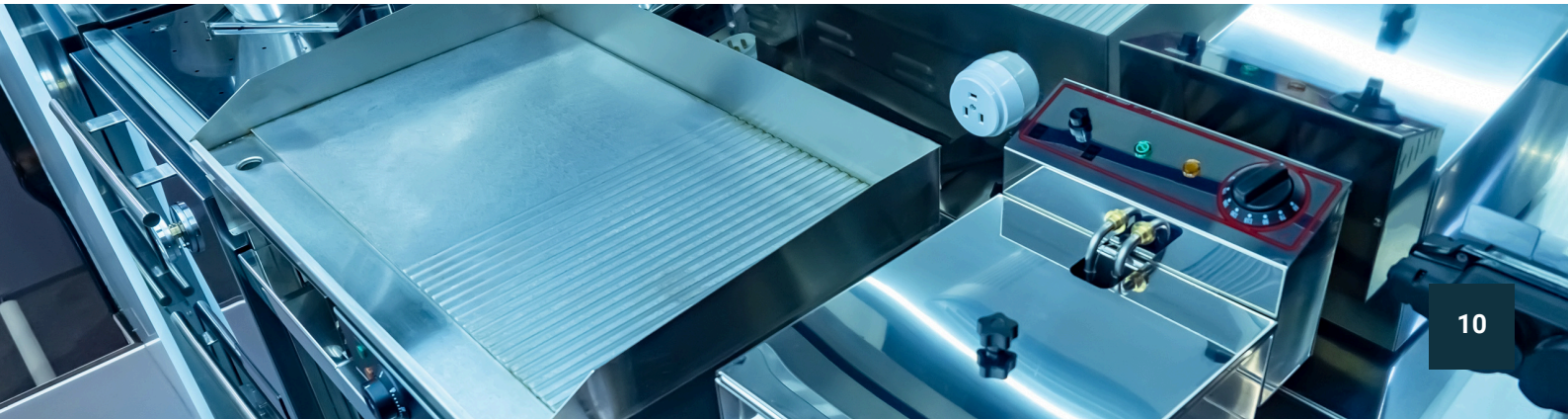
Rooftop exhaust fans require working at height, which carries additional hazards. Many sites lack compliant access systems such as:

- Secure ladders and guardrails
- Fall-arrest systems and anchor points
- Safe equipment transport paths

The BPG recommends full compliance with Australian height safety standards, along with documented risk assessments and training.

Manager Responsibilities

Facility managers should audit access regularly, verify rooftop safety features, and ensure contractors report any inaccessible zones. Addressing access barriers is critical to delivering on fire safety and compliance obligations.



Final Summary & Recommendations

The Best Practice Guide for Commercial Kitchen Exhaust Management represents a shift to a risk-based approach to mantenance grounded in data. It provides a framework that improves safety, operational efficiency, and stakeholder confidence.

By focusing on **measured grease accumulation**, **system access**, and **structured record-keeping**, commercial kitchens can align maintenance with actual risk and avoid the pitfalls of under- or over-servicing.

Practical Steps for Implementation
Operators can begin by:

- Auditing system access and retrofitting panels if needed
- Setting up grease measurement points at regular intervals along the exhaust system
- Training teams on inspection, rooftop safety, and documentation
- Using digital logs to monitor grease trends and cleaning history

This enables proactive scheduling based on actual system performance and measured grease accumulation.

Benefits of Risk-Adjusted Maintenance

- Fire safety: Cleaning is triggered before grease becomes a continuous fuel layer.
- Cost control: Avoids unnecessary servicing while reducing risk exposure.
- Compliance: Maintains defensible records for insurers, landlords, and regulators.
- Scalability: Enables standardised reporting and performance across multiple sites.

Communicating with Stakeholders
To support compliance and stakeholder assurance:

- Share measurement records and cleaning logs with insurers and landlords
- Reference the BPG in insurance, lease, and tender documentation
- Secure access agreements for multi-tenant systems
- Invite stakeholders to review maintenance protocols or inspections

Although compliance with the BPG is voluntary, it reflects best practice in fire risk management. It also strengthens an operator’s position during audits, lease negotiations, or claims disputes.

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