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Executive Summary

In 2012 the EPA Division in collaboration with the Launceston City Council and the Hobart City Council developed and implemented the first phase of the Domestic Smoke Management Program (DSMP) (referred to as the Burn Brighter this winter project). The objective of the program is to influence better public health outcomes for Tasmanians by effecting a reduction in particle concentrations in areas identified as having persistent periods of poor air quality.

Phase one of the program was delivered under the catchphrase Burn Brighter This Winter. This phase of the program was focussed on the following outcomes:

• providing training and resources to those authorities responsible for the management of domestic smoke;
• increasing community awareness of domestic air quality issues; and
• monitoring air quality in defined focus areas.

The Burn Brighter this Winter Project was divided into two broad areas of operation. The Community Engagement area of the project sought to inform stakeholders of the influence of domestic emissions on air quality and its implications for public health and to promote the adoption of best practice wood heater operation. The second area of the project was focused on monitoring activities.

Community Engagement activities, presentations, information documents and letters to residents were produced in accordance with a Communications Strategy that was developed at the commencement of the project. The Communications Strategy outlined communications specifically tailored to engage with residents in the West Hobart and South/East Launceston focus areas. The plan identified the key messages and audiences targeted by the project and provided valuable direction for the production of a considerable number of communication products and information documents. This plan was substantially implemented during phase one of the program. However, several strategy items were not implemented including a strategy to create a comprehensive media profile and the production of educational tools. It is recommended that these items are reconsidered in the planning for phase two of the program.

Community Engagement activities undertaken included:

• Two Smoke Management Training seminars were held for Council EHO’s;
• A project working group seminar was held for the Council EHO’s and EPA staff directly involved in the Burn Brighter this Winter project;
• A mail out to 1190 households introducing Burn Brighter this Winter to residents and providing an information brochure detailing the activities of phase one of the program;
• Issuing letters to 76 households identified as emitting excessive quantities of smoke
• Presenting two public forums (one in each focus area);
• Producing a smoke information pack for delivery to households identified as emitting excessive qualities of smoke; and
• Conducting an ‘in-house’ educational visit.
Air monitoring data conducted in phase one of the program were collected using the Base-Line Air Network of EPA Tasmania (BLANKET) and associated air monitoring instruments developed by the EPA Division. Monitoring was undertaken in focus areas located within the suburbs of East Launceston and West Hobart. These areas were selected for their suitability to assess the effectiveness of the program. The West Hobart and East Launceston areas each included around 500 houses.

The main findings of the monitoring program were:

- Effective car-based monitoring can be conducted in a high-density inner urban residential area;
- Direct measurement of individual smoke plumes in an inner urban area is possible, at least under certain circumstances;
- Localised ‘hot spots’ of elevated PM2.5 concentrations were identified at particular locations in both focus areas; and
- From the monitoring results there is no evidence to suggest that air quality in either the East Launceston or the West Hobart focus areas decreased in the 2012 season as a result of the Burn Brighter this Winter project.
Introduction

Air quality monitoring conducted by the EPA Division in recent years has identified that smoke generated from domestic wood heaters often produces elevated concentrations of fine particles that have the potential to adversely affect many Tasmanian urban and regional population centres.

In 2012 the EPA Division in collaboration with the Launceston City Council and the Hobart City Council developed and implemented the first phase of the Domestic Smoke Management Program (DSMP) known as the Burn Brighter this Winter Project. The objective of the program is to influence better public health outcomes for Tasmanians by effecting a reduction in particle concentrations in areas identified as having persistent periods of poor air quality.

The Burn Brighter this Winter Project was developed and implemented during the 2012 winter period. The project included a series of community engagement events and an air monitoring program. The project was centred on two identified focus areas located in the suburbs of East Launceston and West Hobart. The community engagement aspects of the project were focused on influencing a change in the behaviour of residential operators of wood heaters located in two designated focus areas. The activities undertaken to motivate behavioural change in the operation of wood heaters included the distribution of notifications and educational materials to residents, assisting local council officers in their management of emissions and providing specific advice to residents during arranged home-visits.

The air quality monitoring program for the Burn Brighter this Winter project included a series of car-based monitoring surveys of PM$_{2.5}$ particle concentrations using a ‘Travel BLANkET’ instrument. The ‘Travel BLANkET’ car based monitoring instrument was developed by the EPA Division to increase the spatial range of directly measured ground level PM$_{2.5}$ concentrations and provide greater temporal flexibility in the acquisition of this data. The instrument includes a TSI 8533 Dust Trak™ optical particle counter, inlet heater, modem and associated componentry and is GPS enabled. The ‘TravelBLANkET’ instrument provides near instantaneous mapping of survey routes and PM$_{2.5}$ concentrations for officers conducting smoke monitoring activities. Several ‘Travel BLANkET’ monitoring surveys were conducted in each of the focus areas. Monitoring also incorporated data received at established BLANkET stations located within the focus areas.

Further information on the Base-Line Air Network of EPA Tasmania (BLANkET) project, the BLANkET and TravelBLANkET equipment, and technical reports are available on the EPA Division website (http://epa.tas.gov.au/epa/base-line-air-network-of-epa-tasmania-blanket).
Study Areas

Maps of the two focus areas are shown in Figures 1 and 2.

Figure 1: East Launceston Focus Area. The area is located on either side of High Street. This map was produced using Google Earth.

Figure 2: The West Hobart study area. This area is centred on the intersection of Mellifont and Newdegate Streets. This map was produced using Google Earth.
Community Engagement

Engagement Activities
The following table provides an overview of the activities undertaken as part of the Community Engagement component of the Burn Brighter this Winter project 2012.

<table>
<thead>
<tr>
<th>Item</th>
<th>Launceston</th>
<th>Hobart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoke Management training seminars for EHOs</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Number of EHO attendees at the Burn Brighter this Winter Workshop</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Mail out of initial introduction letter including brochure to residents</td>
<td>624</td>
<td>566</td>
</tr>
<tr>
<td>Specific smoke patrols carried out by Council</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Smoke patrols carried out by Council during routine travel (not specific to the Burn Brighter Project)</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Joint smoke patrols by Council and EPA (Launceston)</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Number of individual houses being identified as having a smoky chimney</td>
<td>18</td>
<td>44</td>
</tr>
<tr>
<td>Notification card informing resident of smoky chimney. (Cards were delivered at the time detection - Hobart only)</td>
<td>0</td>
<td>44</td>
</tr>
<tr>
<td>Issue of letter containing a smoke information package to resident (after 1 sighting in Launceston, after 2 sightings in Hobart)</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>Number of individual houses being identified as having a smoky chimney (First occasion)</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Number of individual houses being identified as having a smoky chimney (Second occasion)</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Number of individual houses being identified as having a smoky chimney (three or more occasions)</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Issue of letter requesting resident to contact council/EPA and arrange a house visit</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>‘In house’ educational sessions conducted</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Invitation to information forum sent out</td>
<td>624</td>
<td>566</td>
</tr>
<tr>
<td>Attendees at information forum</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Correspondence into EPA re Burn Brighter – Positive</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Correspondence into EPA re Burn Brighter – Neutral</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Correspondence into EPA re Burn Brighter – Negative</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>School visits in focus areas</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Communications Strategy Outcomes
A Burn Brighter this Winter project team was formed in May 2012 to develop and implement the communications activities for the project. The group consisted of Environmental Health Officers from the Launceston City Council, the Hobart City Council and officers from the EPA Division. The EHOs and EPA officers belonging to the project team participated in a workshop on 21 May 2012 to develop the approach and appropriate language for officers to be used when inter-acting with residents during the Burn Brighter this Winter project.
A Communications Plan was prepared in consultation with key stakeholders and signed off by the Burn Brighter this Winter Project Team. The Communications Strategy for the Burn Brighter Project 2012 outlined communications specifically tailored to engage with residents in the West Hobart and South/ East Launceston focus areas. Items identified in the strategy included public forums, letters to householders, information brochures, website information and media activities and articles. The Communications Plan covered key messages, target audiences, risks and mitigations to be considered in the release of information relating to the program.

The Communications Plan included several strategy items that were not implemented. These included:

- a media launch of Phase One of the program consisting of a media statement, and followed by a print, radio and television advertising campaign; and
- Development of an instructional DVD on best-practice wood-heater operation and maintenance.

In July unfavorable newspaper articles relating to the potential enforcement aspects of the ‘Burn Brighter this Winter’ project were published in the Examiner Newspaper. Both articles attracted largely negative on-line comments focused on the potential for fines to be issued under the Environmental Management and Pollution Control (Distributed Atmospheric Emissions) Regulations. The premise for the articles and the response were largely misdirected as no enforcement action was initiated and no fines were issued as part of the Burn Brighter this Winter project. The project was focused solely on education and monitoring activities.

Following the publication of the articles critical of the project a ‘Letter to the Editor’ was published in the Examiner Newspaper in which the Director, EPA Alex Schaap and Director, Public Health Dr. Roscoe Taylor explained and reinforced the merits of the ‘Burn Brighter this Winter’ project.

Additional stakeholder engagement activities were undertaken towards the end of the winter season including a Newspapers In Education (NIE) feature on wood smoke published in The Mercury on 29th Aug 2012.

**Communication Products**
The following items were produced in support of Phase One of the Burn Brighter This Winter Project 2012:

- A Website presence was developed,
  - The website included information on the Domestic Woodsmoke Management Program, Burn Brighter this Winter project and links to real time air quality data for Tasmania.
  - The Launceston City Council and Hobart City Council developed links to the Burn Brighter information from their respective web sites.
- A Media Release was drafted.
- An information piece was posted on the EPA Division and DPIPWE Agency-wide intranet
- A member of the project team participated in a sustainability network forum for Teachers on 28th June. A presentation introducing to the topic of domestic woodsmoke was delivered at
the forum and invitations provide free school visits to present information to students was offered.

- Information was sent via e-mail to stakeholder organisations informing them of the commencement of the project.
- Burn Brighter Officer Badges were provided to members of the project group. These badges were intended for EPA officers and Council staff to wear during their interaction with residents and in particular when conducting home visits.
- A letter was sent to all residents located in the two focus areas.
- A brochure titled ‘Burn Brighter this Winter and reduce smoke from your wood heater’ was produced and included with the initial letter to residents.
- Members of the project team from the Hobart City Council produced a notice for delivery to residents identified with smoky chimneys. These notices were placed in the resident’s letterbox at the time the smoky chimney was detected.
- A warning letter to residents who had been identified as having a smoky chimney was drafted and issued to residents when appropriate.
- A brochure providing a step-by-step photo guide to lighting a fire and titled ‘A step-by-step guide to home heating and a healthy community’ was produced. This brochure was part of a group of information documents provided to residents.
- A second warning letter to households was drafted and sent to residents identified as having an excessively smoky chimney on 3 or more occasions. This letter requested that the resident contact a member of the project team to arrange for a home visit to determine the cause of the persistent smoke emissions.
- Letters were sent to householders inviting them to public forums.
- Public Forums were conducted in Launceston and Hobart. Each forum included presentations from Dr John Todd, Dr Fay Johnson, Dr John Innis, HCC/LCC and DHHS.
- 4 schools in the West Hobart area were formally approached to host a free ‘wood smoke/ air quality’ info session for students.
- Several articles were prepared for community publications circulated in the focus areas (publications included the Hobart City Council News and LGAT Magazine)
- An article on wood smoke was produced and appeared as the ‘Newspapers in Education’ (NIE) feature in the Mercury Newspaper (Wed 29 August 2012)
- A member of the project group delivered a presentation at the Environmental Health Australia (EHA) Tasmanian State Conference on 5th October 2012.

**Air Monitoring**

Air quality monitoring for the Burn Brighter project was conducted in both the West Hobart and South/East Launceston study areas. Monitoring data for PM2.5 particle concentrations were obtained from two BLANKET monitoring stations. An existing BLANKET air station located in South Launceston, near High St provided data relating to the East Launceston study area. A BLANKET station was installed in a residential property in Lower Jordan Hill Road in June 2012 to monitor the West Hobart area. Car-based ‘Travel BLANKET’ measurements for PM2.5 concentrations were also
conducted in both study areas. Car-based monitoring surveys were conducted on seven nights in Launceston and four nights in West Hobart.

The fixed station data showed that PM$_{2.5}$ levels at South Launceston were higher than those at West Hobart.

The Travel BLANkET survey data showed that effective car-based smoke measurements could be made in a high density residential urban area. On many occasions direct measurement of individual plumes was possible. In some instances the presence of an excessively smoky plume was first noted by consistently high PM$_{2.5}$ readings on independent transects of a given area.

In South/East Launceston there was evidence that PM$_{2.5}$ levels along the High St ridge were lower than in the valleys to the east and west. In West Hobart smoke levels in the eastern part of the study area, along the valley containing Newdegate St, were generally greater than in the higher ground towards Mt Stuart in the western end.

Analysis of the data for both study areas gives no evidence for a change in air quality during the course of the Burn Brighter this Winter project. Comparing the winter 2012 data for South Launceston with 2011 values also gives no evidence for a change between these years. There is some evidence that residents reduced their smoke emissions after being contacted by members of the Burn Brighter this Winter Project and were provided with information on best practice operation of wood heaters. Any reduction in emissions due to this change in behaviour was not reflected in a measurable change to overall PM$_{2.5}$ concentrations in the study areas. It is considered this may have been due to the contribution of smoke generated from sources outside the study areas masking any local decrease in emissions.

**Future Considerations**

The following points provide an overview of the issues that have been identified as areas in which changes can be made to improve the delivery of the program. These points will be incorporated into the development of plans for Phase Two of the program.

- Selection of an appropriate focus area is vital. Areas that were small and contained narrow streets in steep or undulating topography are not ideal for conducting Smoke Patrols.
- Smoke patrols are required earlier in the winter season. Smoky chimneys are more likely to be identified if patrols and monitoring are established in early May. This will provide the time necessary for education materials to be delivered to residents and the desired modification of their behavior when operating wood heaters to take place.
- Additional notice is required for arranging and conducting school visits. There are possible synergies are with the health aspects of the curriculum. This opportunity should be explored in the development of the engagement activities for Phase two of this program.
- A more pro-active media strategy is recommended.
- Home-visits are ineffective. Residents generally are not prepared to invite Burn Brighter this Winter officers into their homes. A different strategy for this component of the program is required.
• Documentation provided as part of the community engagement strategy needs to have a more “friendly” appeal. Flyers and cards may be more readily received than official looking envelopes containing formal letters.
• Presentations and forums should focus on specific groups rather than the public at large. Community groups and schools offer opportunities to present to larger groups of people in an organized environment.
• Additional focus on web-based information is required. However, consideration should be given to the residents of focus areas located in low socio-economic areas and areas with poor levels of access to internet networks. The development of on-line presentations and instructional videos provide an opportunity for information otherwise presented in a forum environment to be produced for a larger audience.

Conclusion

Phase one of the Domestic Smoke Management Program (referred to as the Burn Brighter this Winter project) was successfully delivered during the winter months of 2012. Smoke patrol activities were successful at identifying houses emitting excessive smoke and follow-up communications with the residents for these houses was an effective method of moderating their smoke emissions. Of the 62 houses identified as emitting excessive quantities of smoke only 9 had persistent smoke emissions at the conclusion of this phase of the program.

The community engagement activities developed and implemented in the West Hobart and East Launceston focus areas will form the basis for the documentation and information to be incorporated into phase two of the program. An increased focus on media exposure and a re-evaluation of the merits of producing web-based content will be highlighted in the planning of phase two.

The benefit of operating mobile and fixed stations for the collection of smoke data was identified as a very powerful combination. The enhanced spatial resolution of the mobile units coupled with the extended temporal data from the fixed stations provided a great insight into the characteristics of particle concentrations in the focus areas and allowed for comparison of the data collected by each of these methods. This kind of data will also be used to determine relative estimates of population exposure to particles in urban areas.

Analysis of the monitoring data obtained from the BLANkET stations and the Travel BLANKET surveys conducted in the focus areas has not provided evidence that the phase one intervention has influenced a measurable change in the particle concentrations present in the focus areas during the course of the program. However, anecdotal evidence obtained from residence suggests some improvement in particle levels.

Currently planning for phase two of the DSMP is being undertaken and is expected to begin in early May 2013.