

5.7 6 SEPTEMBER – MORNING

The wind conditions at the time of this assessment session were light winds, tending predominately in the westerly direction.

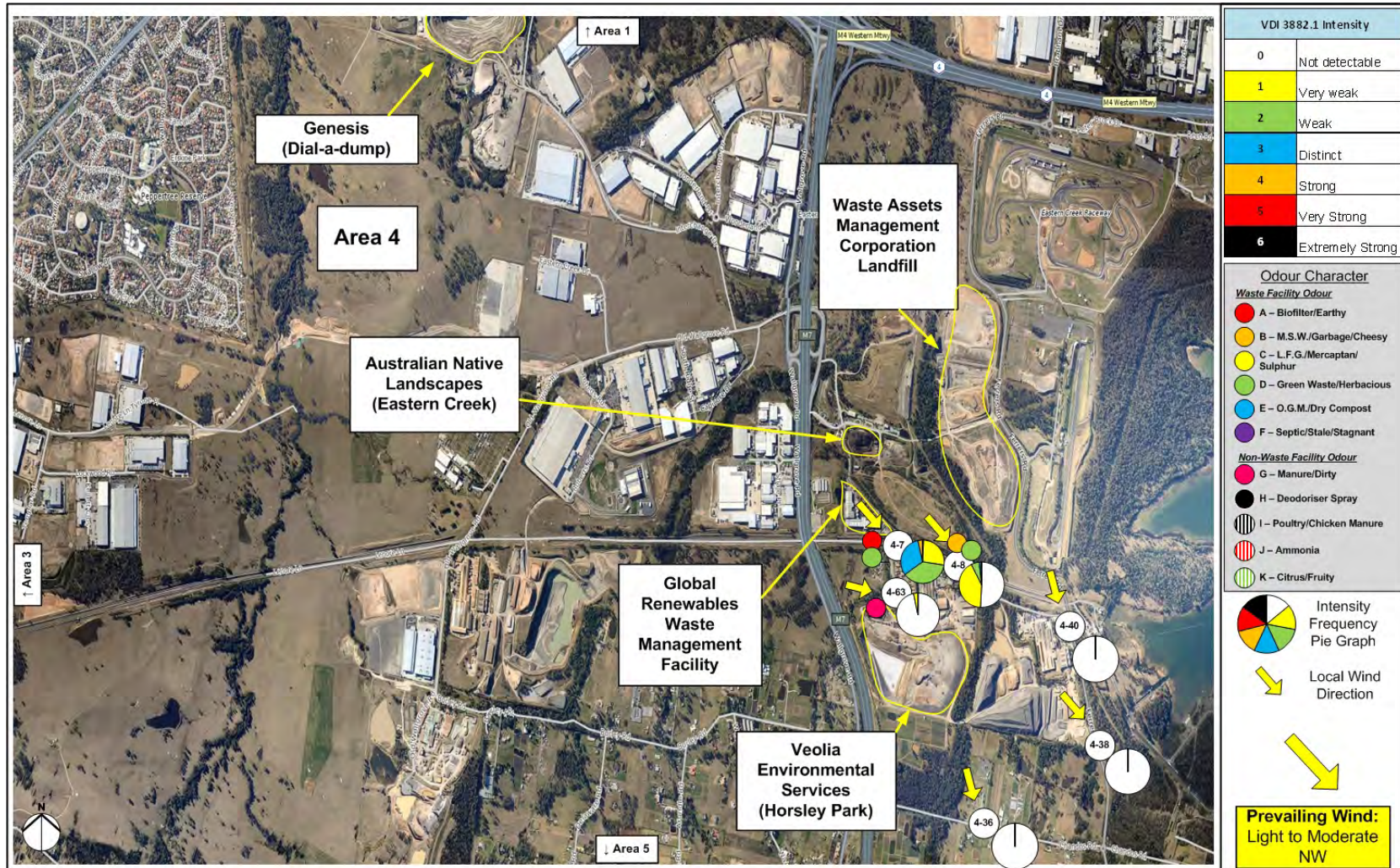
Area 4

On this occasion, there was relatively minor odour detectable from the Global Renewables Facility. Very weak to distinct Biofilter / Earthy, Greenwaste / Herbacious and MSW / Garbage / Cheesy odour were detectable immediately downwind of the facility. These odours were not detectable beyond the Austral Bricks Private Road on this instance.

Area 6 and Area 7

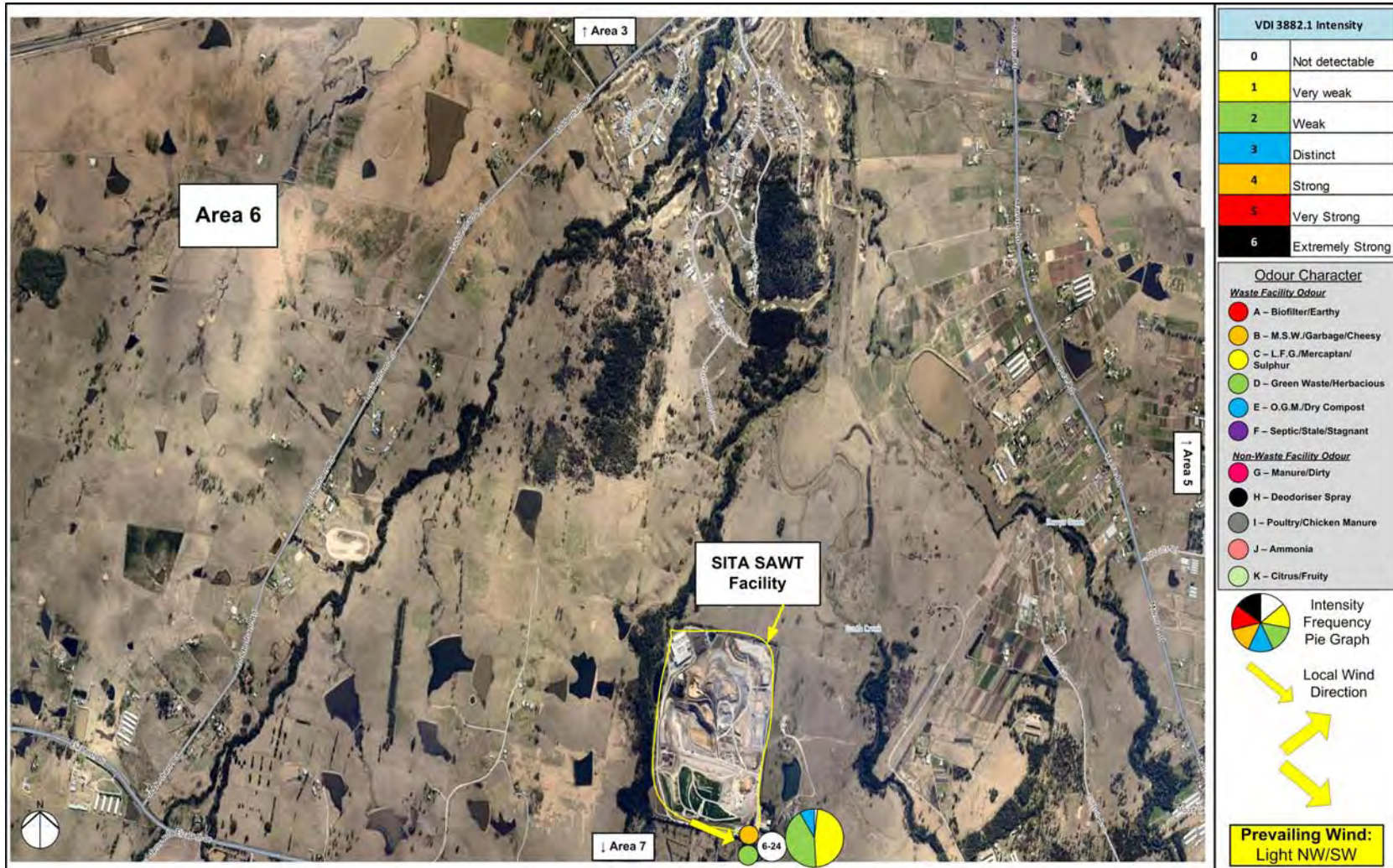
On this occasion, a very weak to weak MSW / Garbage / Cheesy and Greenwaste/Herbacious odours were detectable downwind of the SITA SAWT Facility.

No other odour was detectable in the vicinity of these assessment areas.



Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map
 (Map source: nearmap)

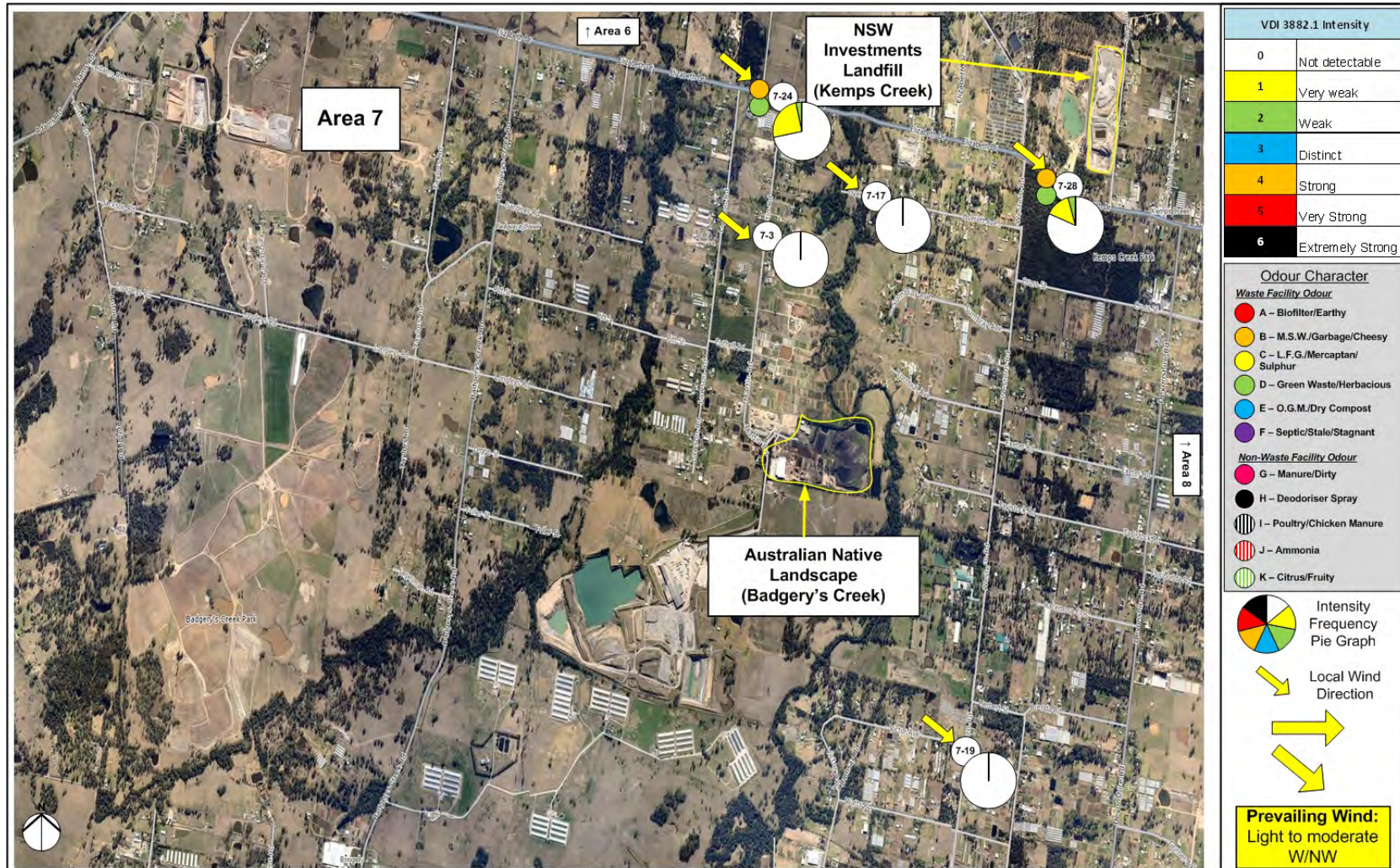
Field Ambient Odour Assessment Survey
 Session Date: 06/09/12 Session Time: 0600 to 1200
 Area: 4 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 21/09/12



Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map (Map source: nearmap)

Field Ambient Odour Assessment Survey

Session Date: 06/09/12 Session Time: 0600 to 1200
 Area: 6 Odour Impact Criterion: Intensity \geq 1, Frequency \geq 10%
 Drawn By: S. Hayes Revision: A Date: 21/09/12



Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 06/09/12 Session Time: 0600 to 1200
 Area: 7 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 21/09/12

5.8 6 SEPTEMBER – EVENING

The wind conditions at the time of this assessment session were light to moderate winds, tending predominately in the northwest direction.

Area 4

On this occasion, there was odour detectable along Ferrers Rd and the Austral Bricks Private Rd (south of the Global Renewables Facility). It was found that Biofilter / Earthy and OGM odours were detectable at very weak to weak intensities downwind of the Global Renewables Facility on this instance. In addition, MSW / Garbage / Cheesy and LFG / Mercaptan / Sulphur odours were detectable downwind of the WAMC Landfill along Ferrers Rd (MLPs 4-10 to 4-11 and 4-13 to 4-14). These odours were not detectable further downwind.

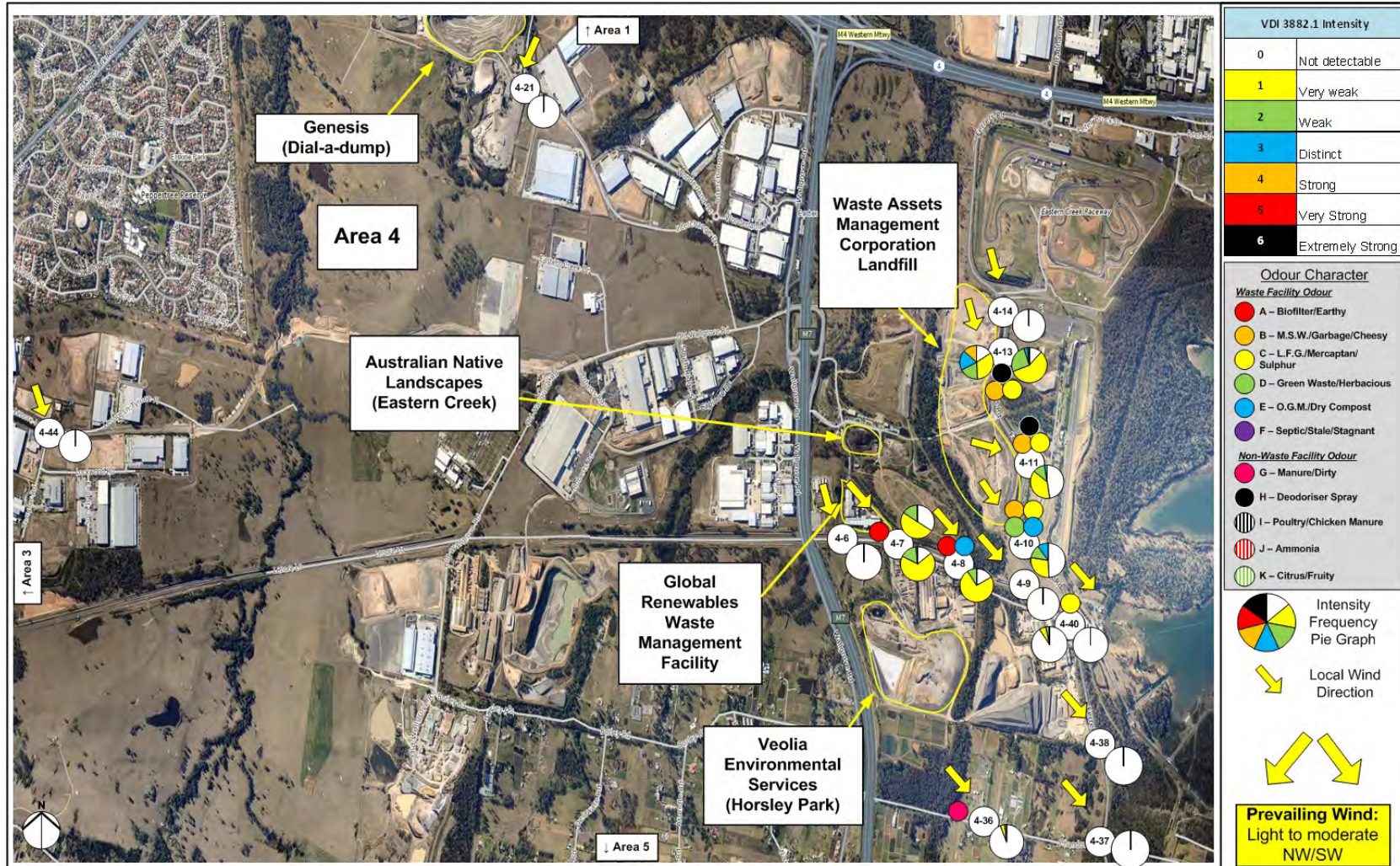
Area 6

On this occasion, Greenwaste / Herbacious and MSW / Garbage / Cheesy odours were detectable east of the SITA SAWT Facility, at very weak to distinct intensities at MLPs 6-12, and at 6-11 and 6-24. This was likely originating from the SITA SAWT Facility at the time.

Manure / Dirty and Dry Compost odours were also detectable at very weak to distinct intensities at MLPs 6-9, 6-10 and 6-12. This was likely originating from a multitude of horticultural farms and piggeries that reside in the eastern region of this assessment area.

Area 7

At MLPs 7-15 and 7-18 Manure / Dirty, Greenwaste / Herbacious, Septic / Stale / Stagnant and Ammonia based odours were detectable at very weak to strong intensities. These were likely originating from farms residing within this area as on previous occasions, although there was a possibility (however difficult to evaluate on this occasion) that Australian Native Landscapes (Badgery's Creek) was contributing at the time as it was detectable downwind of the facility.



VDI 3882.1 Intensity	
0	Not detectable
1	Very weak
2	Weak
3	Distinct
4	Strong
5	Very Strong
6	Extremely Strong

- Odour Character**
- Waste Facility Odour*
- A – Biofilter/Earthy
 - B – M.S.W./Garbage/Cheesy
 - C – L.F.G./Mercaptan/Sulphur
 - D – Green Waste/Herbacious
 - E – O.G.M./Dry Compost
 - F – Septic/Stale/Stagnant
- Non-Waste Facility Odour*
- G – Manure/Dirty
 - H – Deodoriser Spray
 - I – Poultry/Chicken Manure
 - J – Ammonia
 - K – Citrus/Fruity

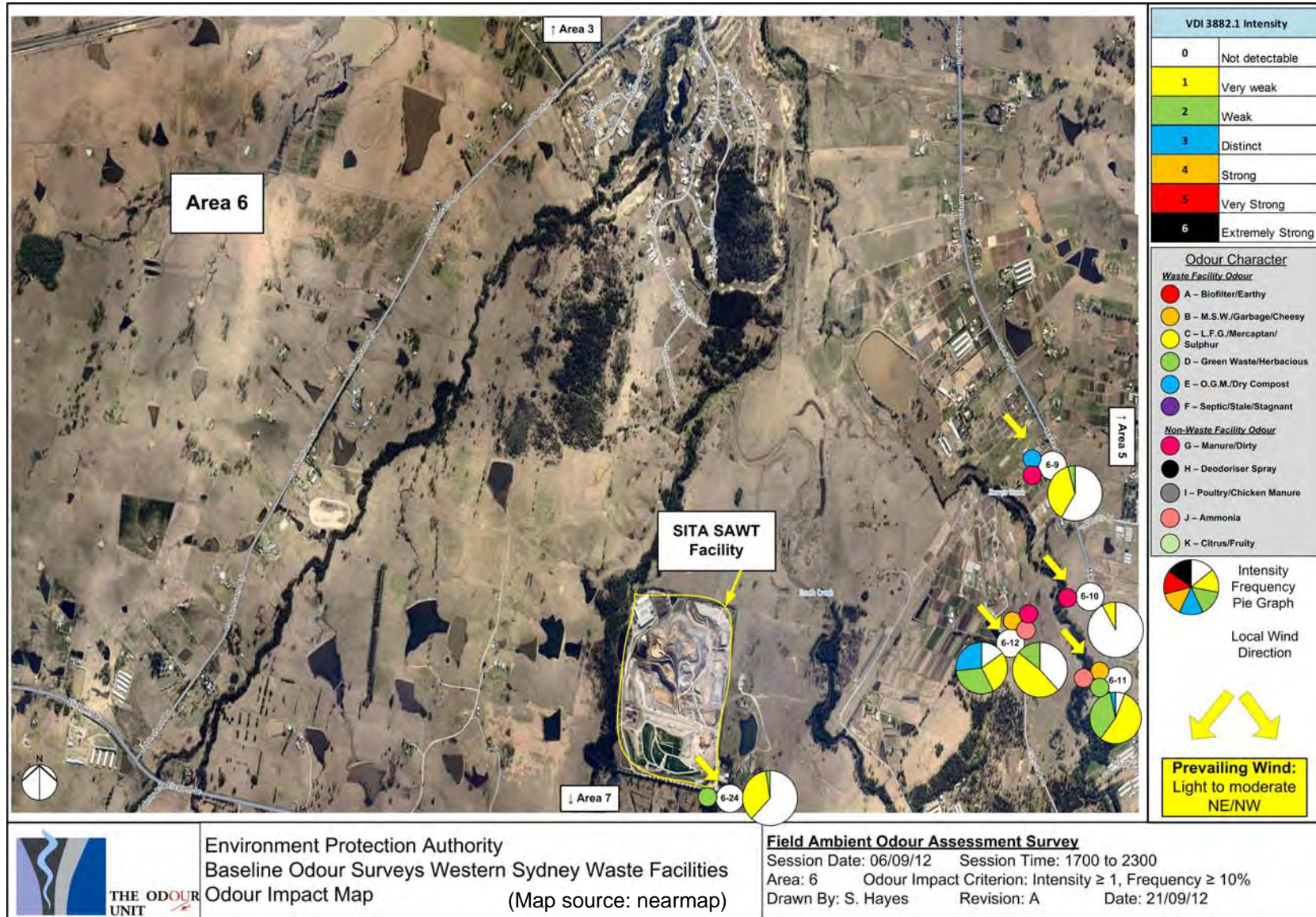
Intensity
Frequency
Pie Graph

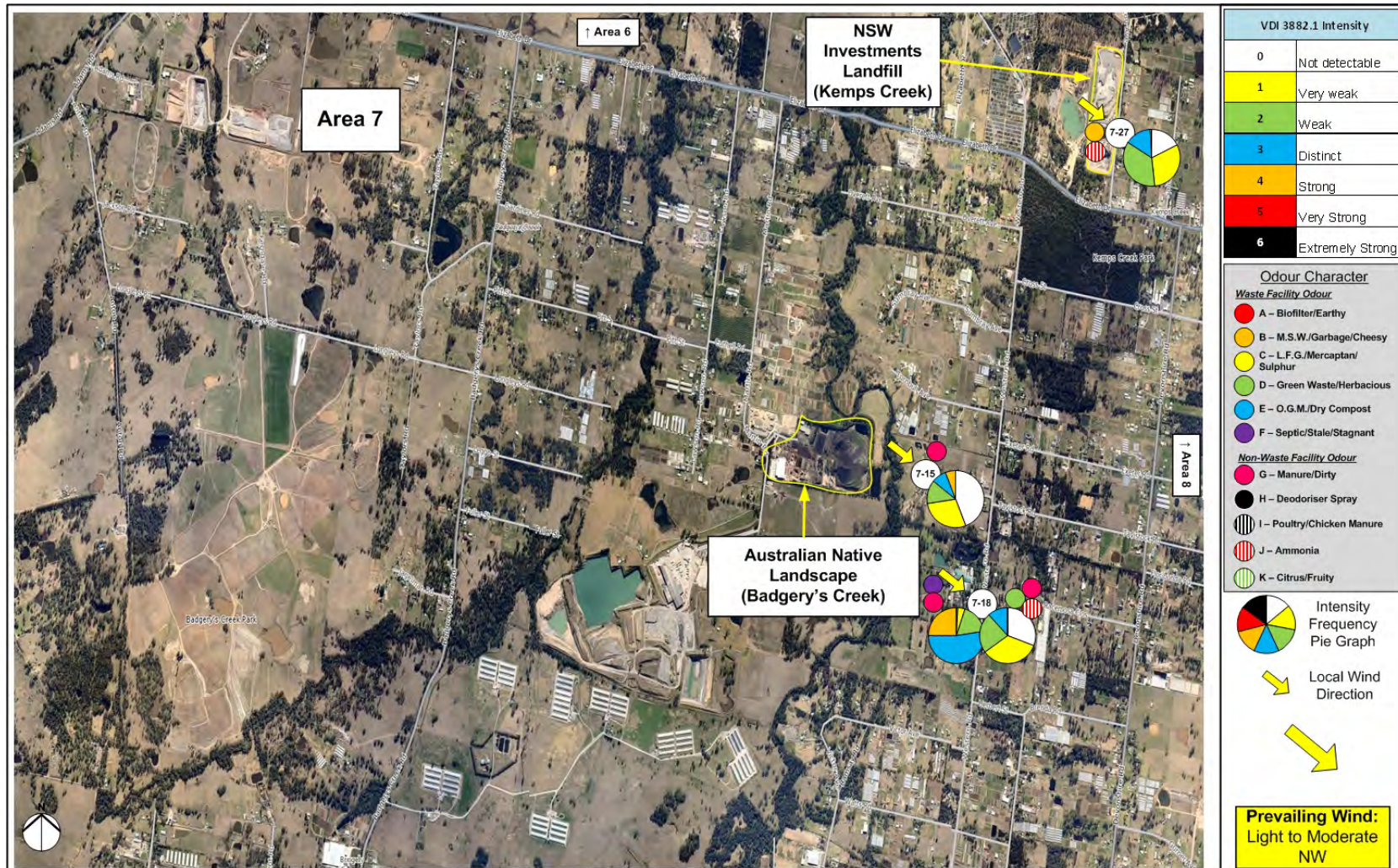
Local Wind Direction

Prevailing Wind:
Light to moderate
NW/SW

Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map
 (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 06/09/12 Session Time: 1700 to 2300
 Area: 4 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 21/09/12





Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map
 (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 06/09/12 Session Time: 1700 to 2300
 Area: 7 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 25/09/12

5.9 10 SEPTEMBER 2012 – EVENING

The wind conditions at the time of this assessment session were light winds, with a definitive wind direction difficult to determine.

Area 1 and Area 4

Very weak to strong MSW / Garbage / Cheesy and LFG / Mercaptan / Sulphur odours were detectable downwind of the WAMC Landfill, and detectable for up to 2 km northeast of the facility (see MLPs 4-11, 4-14, 4-16, 4-17 and 1-31). The likely source of the odour on this occasion would be the WAMC Landfill. This represented significant presence of odours on this occasion from this facility.

A Greenwaste/Herbacious odour was also detectable downwind of the Global Renewables facility on this occasion. Additionally, Poultry / Chicken Manure and Manure / Dirty odours were also detectable at very weak to distinct intensities and likely originating from farms residing in these assessment regions.

Area 3 and Area 6

On this occasion, Greenwaste / Herbacious and MSW / Garbage / Cheesy odours were detectable at MLPs 6-5 and 6-7, and further downwind (approximately 5 km downwind of the SITA SAWT Facility) at MLPs 3-3, 3-4 and 3-21 in very weak to weak intensities. It was likely originating from the SITA SAWT Facility at the time. This represents significant presence of odour on this occasion from this facility

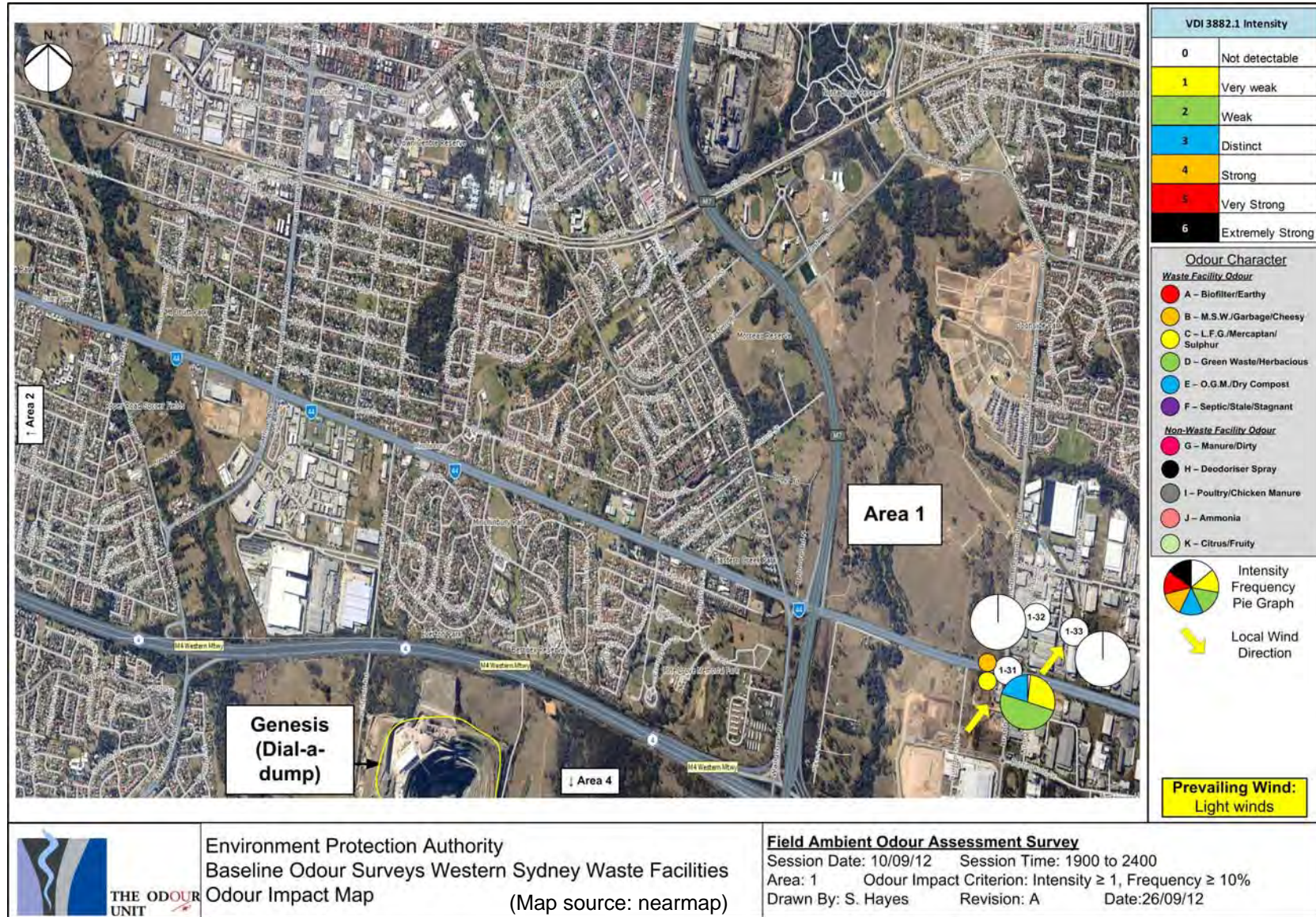
No other odours were detectable these assessment areas on this occasion.

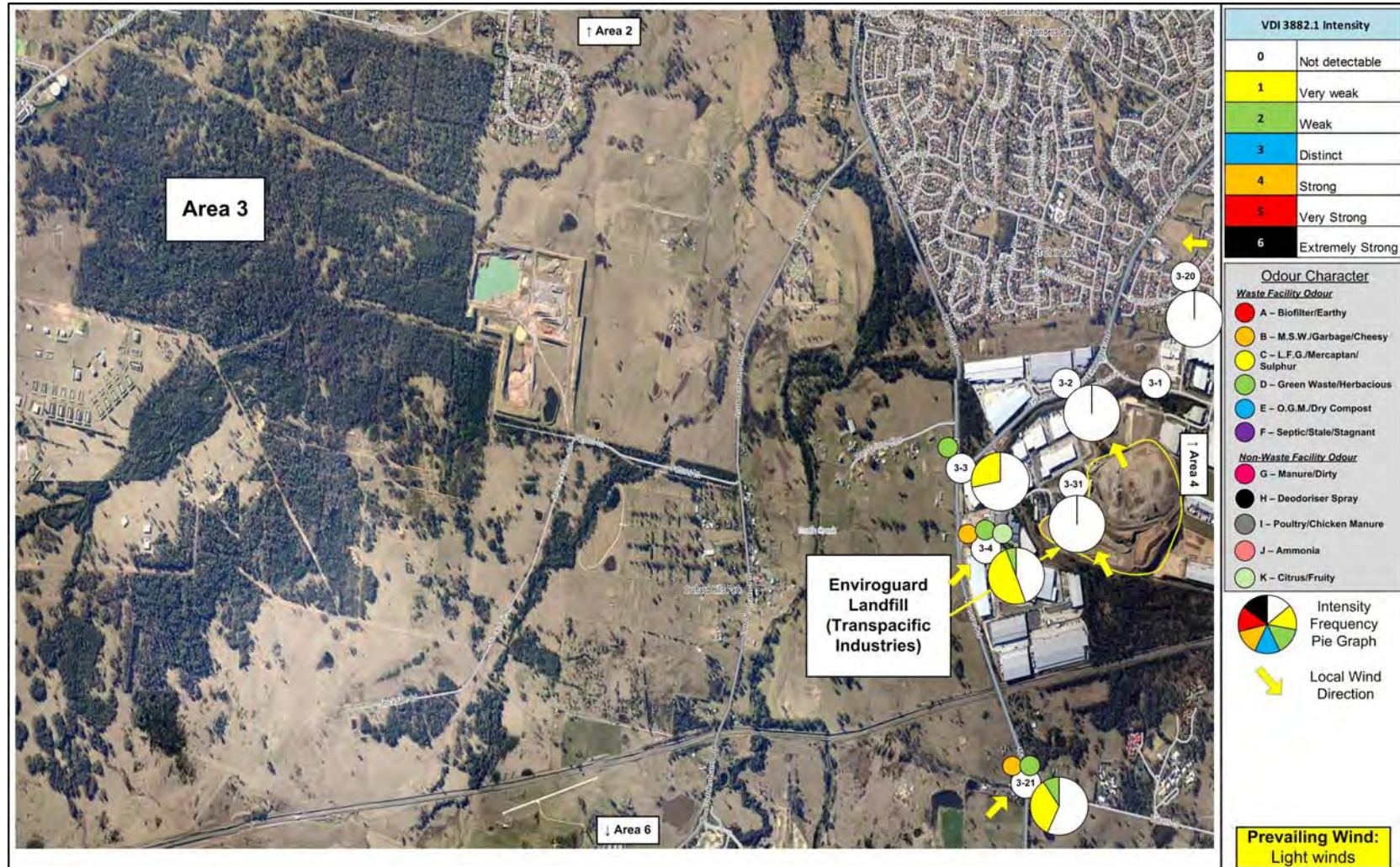
Area 7

Localised Greenwaste / Herbacious and Dry Compost odours were detectable on the immediate western boundary (Martin Rd) of the Australian Native Landscapes Facility (Badgery's Creek). These odours were not detectable further downwind (MLP 7-4) on this occasion.

Area 8

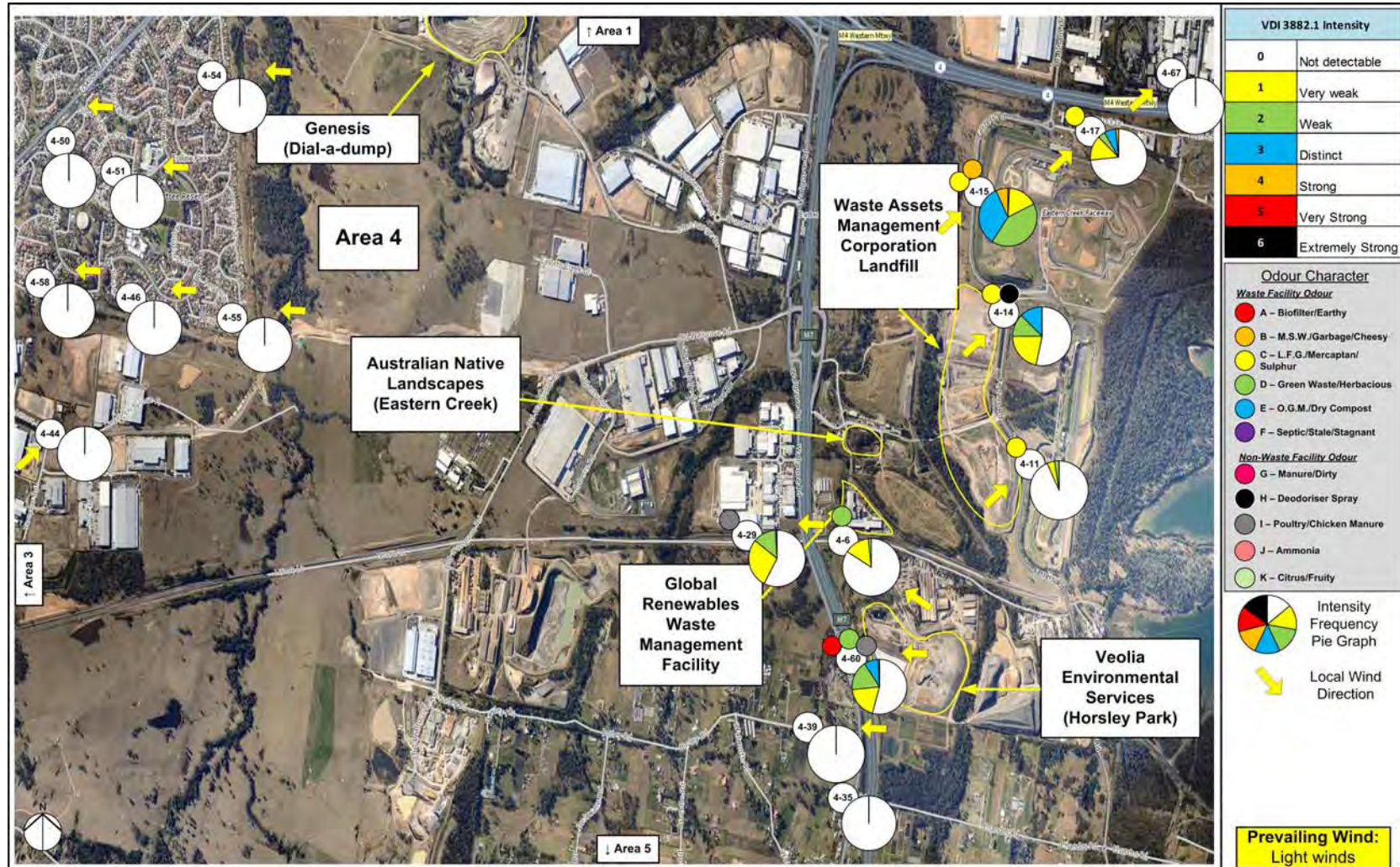
No significant odour was detectable on this occasion at this Assessment Area.



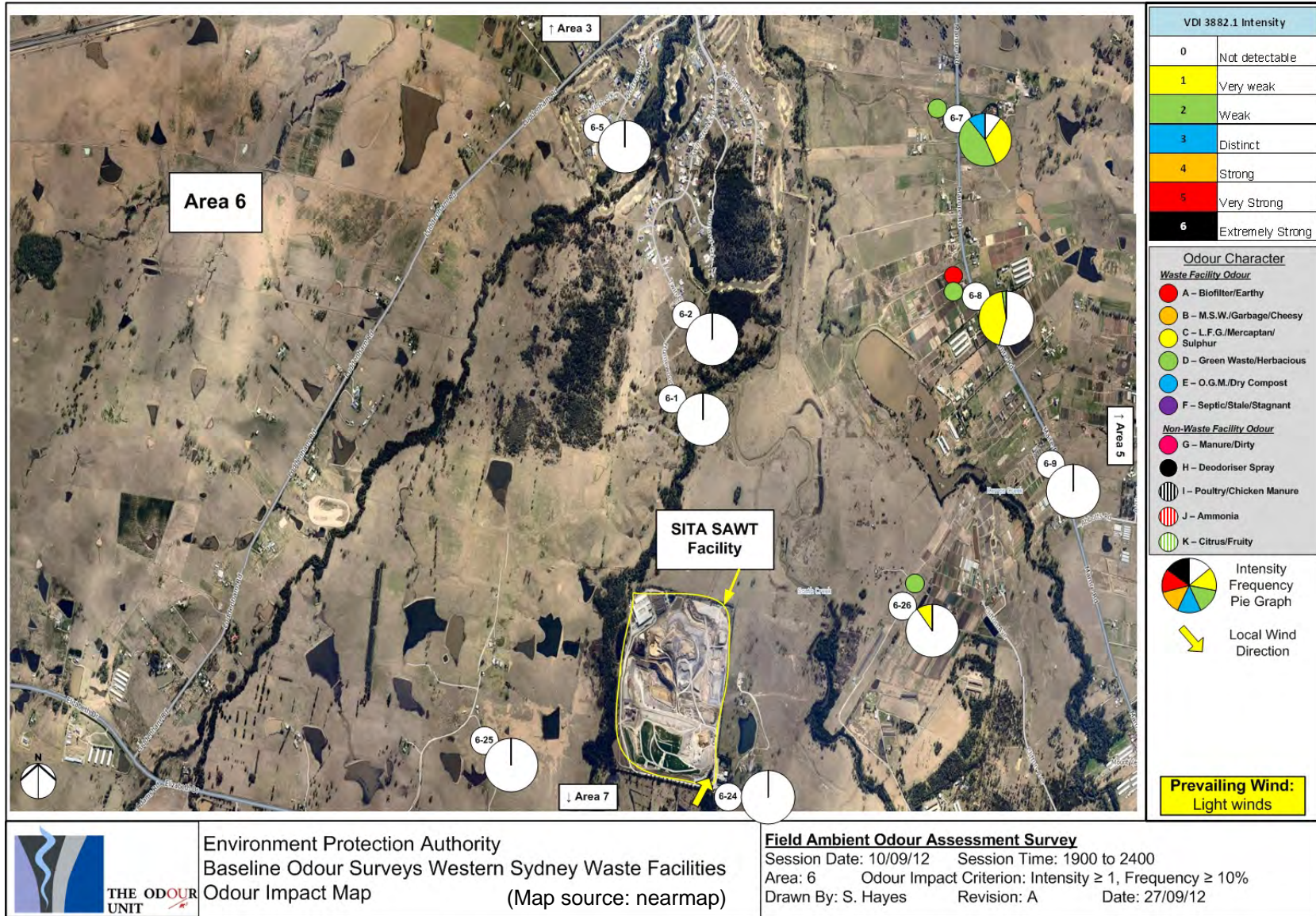


Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map
 (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 10/09/12 Session Time: 1700 to 2400
 Area: 3 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 27/09/12



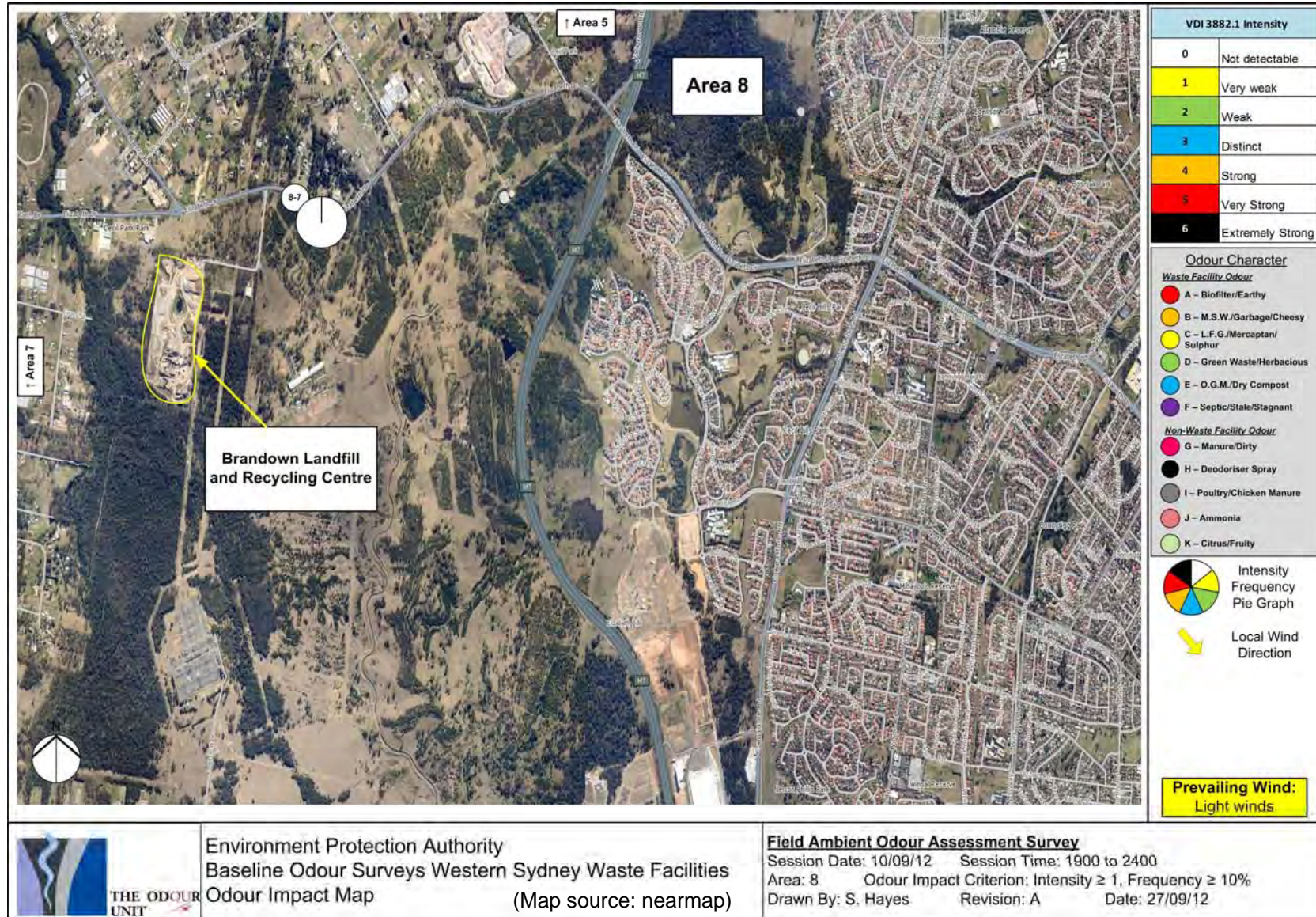
	Environment Protection Authority Baseline Odour Surveys Western Sydney Waste Facilities Odour Impact Map (Map source: nearmap)	Field Ambient Odour Assessment Survey Session Date: 10/09/12 Session Time: 1900 to 2400 Area: 4 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10% Drawn By: S. Hayes Revision: A Date: 26/09/12
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Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map
 (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 10/09/12 Session Time: 1900 to 2400
 Area: 7 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 27/09/12



5.10 11 SEPTEMBER 2012 – EVENING

The wind conditions at the time of this assessment session were light winds, tending predominately in the southerly direction.

Area 1, Area 3 and Area 4

Very weak to strong MSW / Garbage / Cheesy and LFG / Mercaptan / Sulphur odours were detectable downwind of the WAMC Landfill, and detected for up to 3 km northeast of the facility. This represented significant presence of odour on this occasion from the WAMC Landfill.

Additionally, a very weak to weak Greenwaste / Herbacious odour was detectable at MLP 4-60 and likely originating from the Betta Burn Firewood Horsley Park centre. Similarly, a Greenwaste / Herbacious odour was also detectable at MLPs 4-44 and 4-45, and extending west to Area 3 (MLPs 3-3, 3-31 and 3-1). The source for the Greenwaste / Herbacious odour in this region at the time could not be accurately determined. Notwithstanding this, Greenwaste / Herbacious odour was further detectable in Assessment Area 6 (see below for details). It was unlikely to be TPI Enviroguard Landfill as this odour was detected upwind of the site.

On this occasion also, Biofilter / Earthy and Ammonia odours were detectable on-site the Global Renewables Facility at MLP 4-68. Similar odours were detectable further downwind, north of the Global Renewables site at MLPs 1-34 and 1-35 (representing a 3.5 km distance from the site). A weak to strong Greenwaste / Herbacious odour was also detectable downwind at MLP 4-3. The source for these odours on this occasion at these points was likely the Global Renewables Facility.

Moreover, LFG / Mercaptan / Sulphur odour was detectable at very weak to strong intensities at MLP 4-14, and was further detected downwind at MLPs 4-17, 1-34 and 1-32. The distance from 4-14 to 1-32 equates to approximately 2 km from the northern boundary of the WAMC Landfill Facility, which would have been the likely source of the LFG / Mercaptan / Sulphur odour at these points on this occasion.

No odour was detectable in the Minchinbury region (see MLPs 1-6 and 1-8) on this occasion that could be attributed to any of the facilities.

Area 6

On this occasion, a Greenwaste / Herbacious odour was detectable downwind of the SITA SAWT Facility at very weak to weak intensities. Further downwind, north of Area 6 (i.e. Areas 1 & 3), similar odour was detectable, however, at stronger intensities. The likely source of this odour on this occasion was difficult to evaluate. It is possible that since similar odour was detectable downwind of the SITA SAWT Facility that it could have contributed to this. It is unclear, however, why it was stronger further downwind in Area's 1 and 3 and weaker in Area 6 (i.e. closer to the SITA SAWT Facility) and could be attributed to a range of meteorological factors, if indeed it was emanating from the SITA SAWT Facility. It was observed that at MLP 6-2 a deodoriser spray was detectable at very weak intensities. It was likely originating from the SITA SAWT Facility at the time.

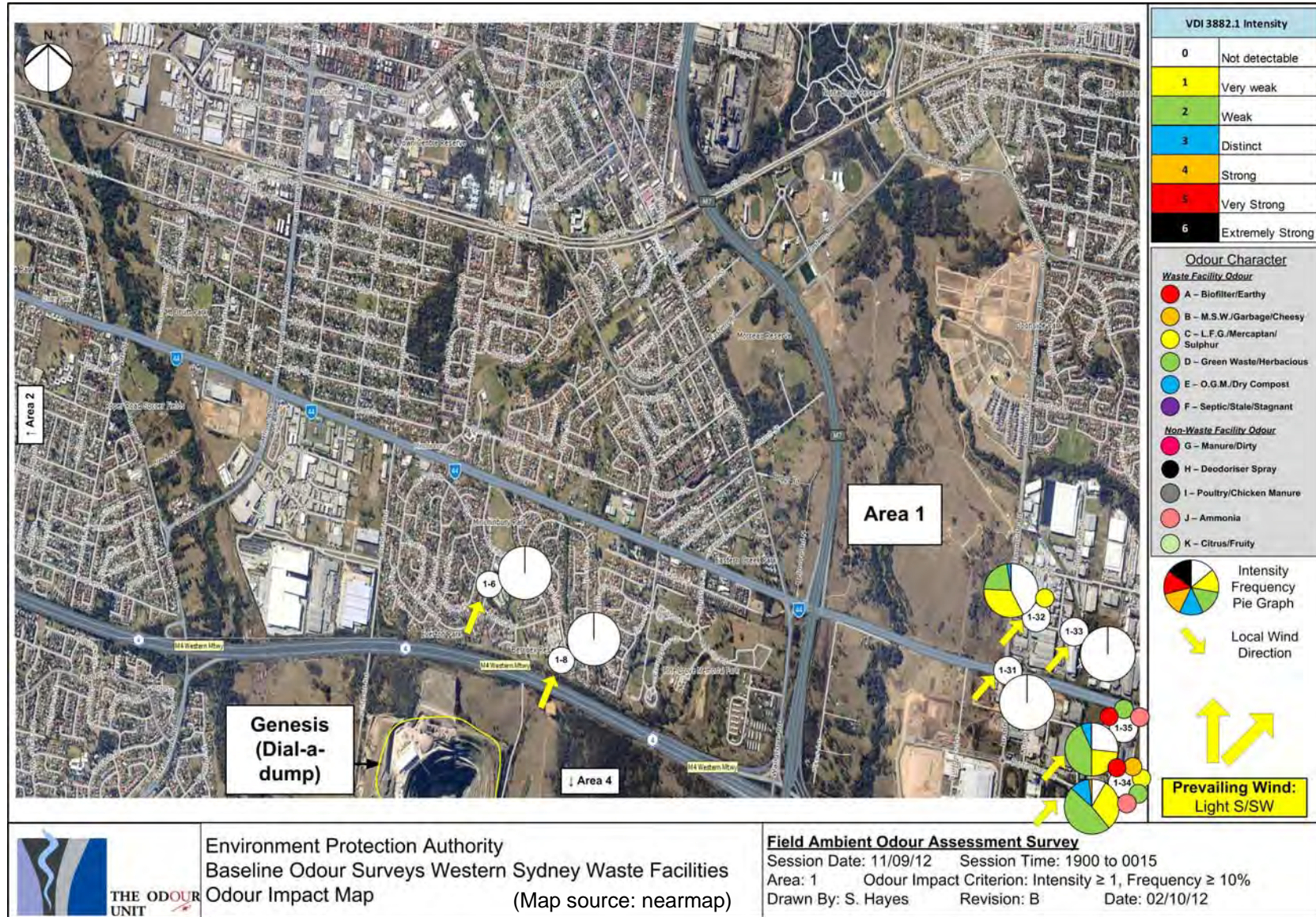
Area 7

On this occasion, odour was detectable at the western boundary (see MLP 7-1) of the Australian Native Landscapes (Badgery's Creek) Facility. This odour was present at very weak to weak intensities and was not found to travel further downwind from this point (see MLPs 7-14 and 7-3).

Additionally, very weak to distinct Poultry / Chicken Manure, Manure / Dirty and LFG / Mercaptan / Sulphur odours were also detectable within is assessment region. It is likely that these odours would have been originating from farms residing within the close vicinity of the MLP. It is unclear where the source of LFG / Mercaptan / Sulphur odour would be originating from, and appears to may have been, a localised incident.

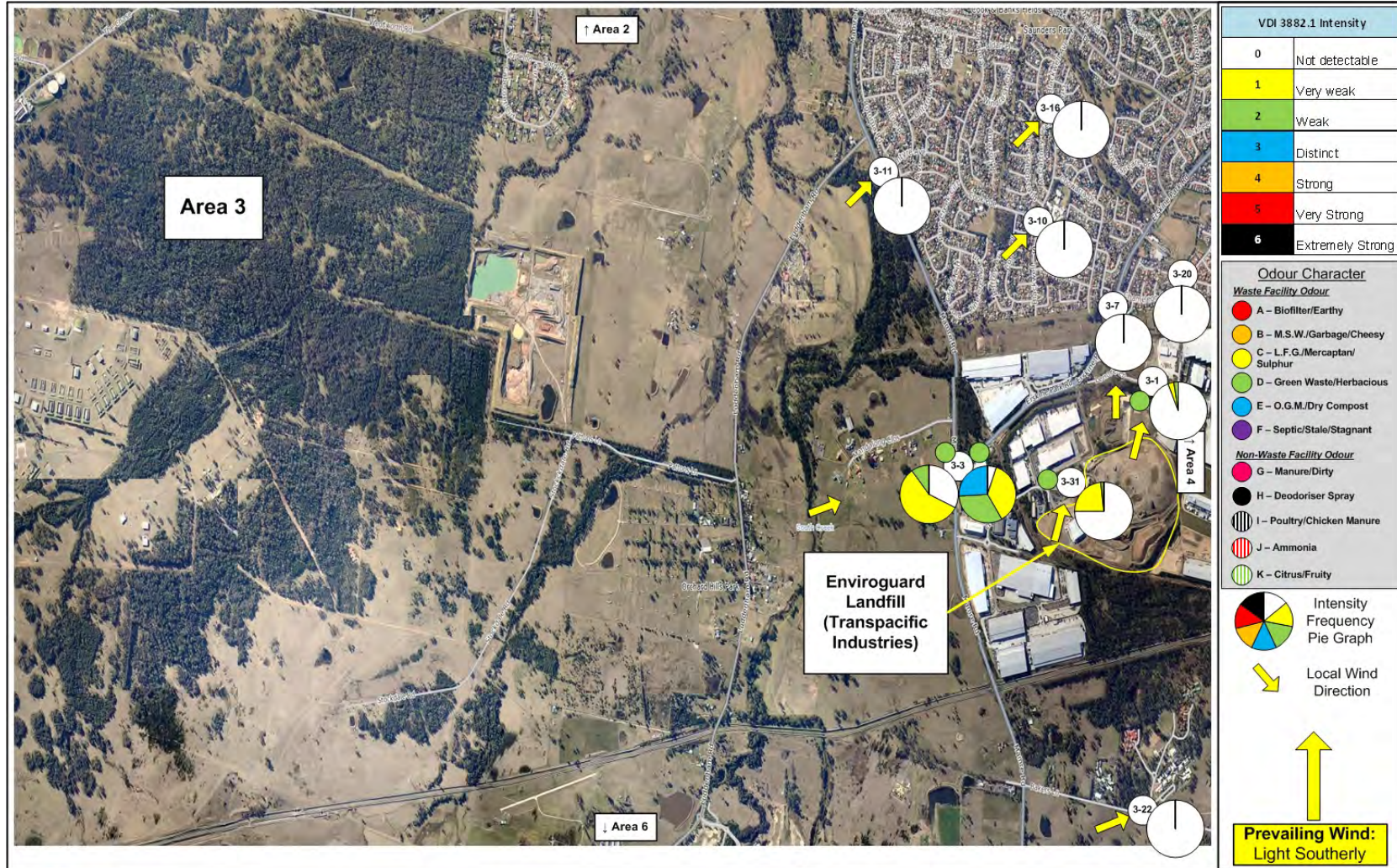
Area 8

No significant odour was detectable on this occasion at this Assessment Area.



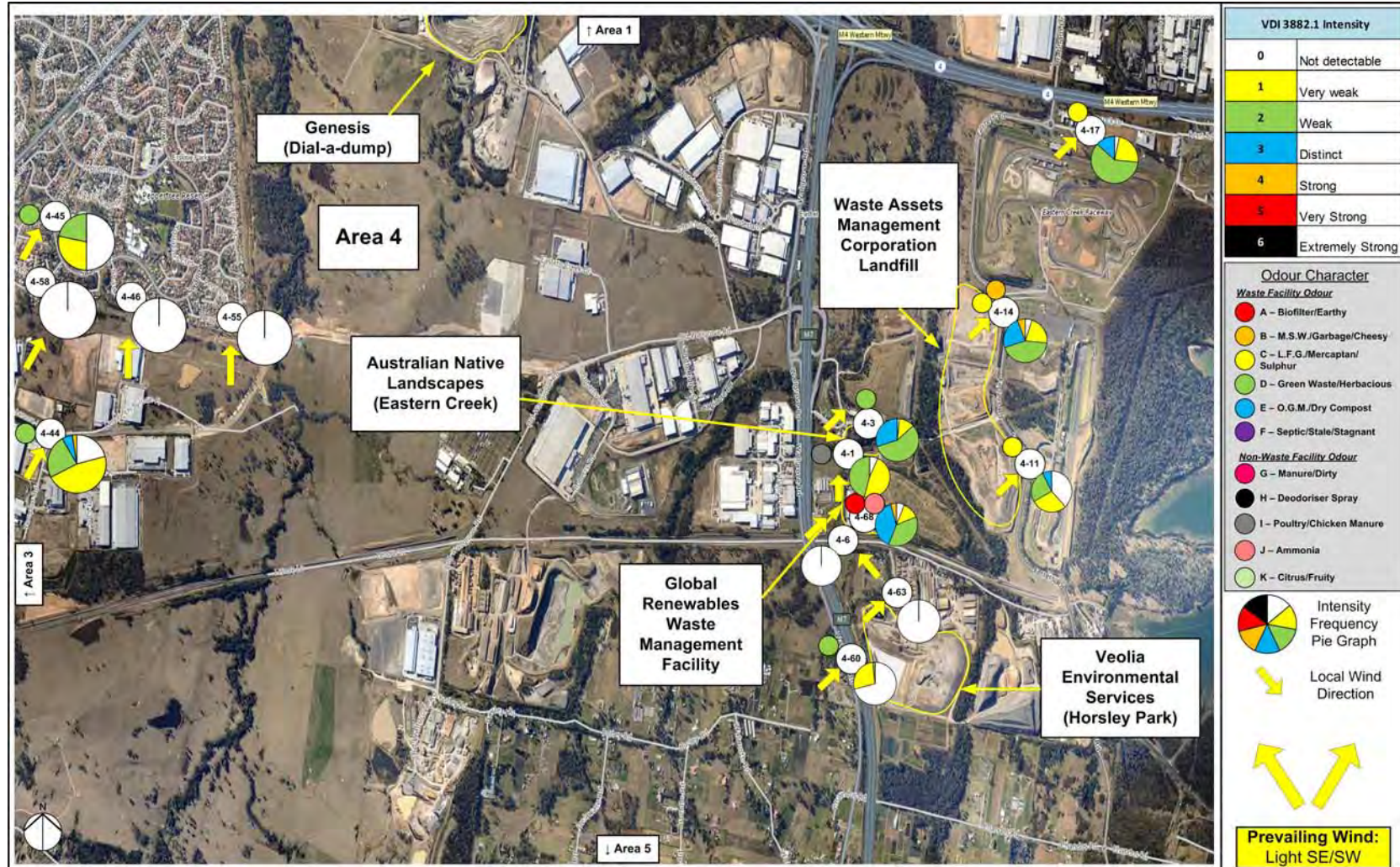
Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 11/09/12 Session Time: 1900 to 0015
 Area: 1 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: B Date: 02/10/12



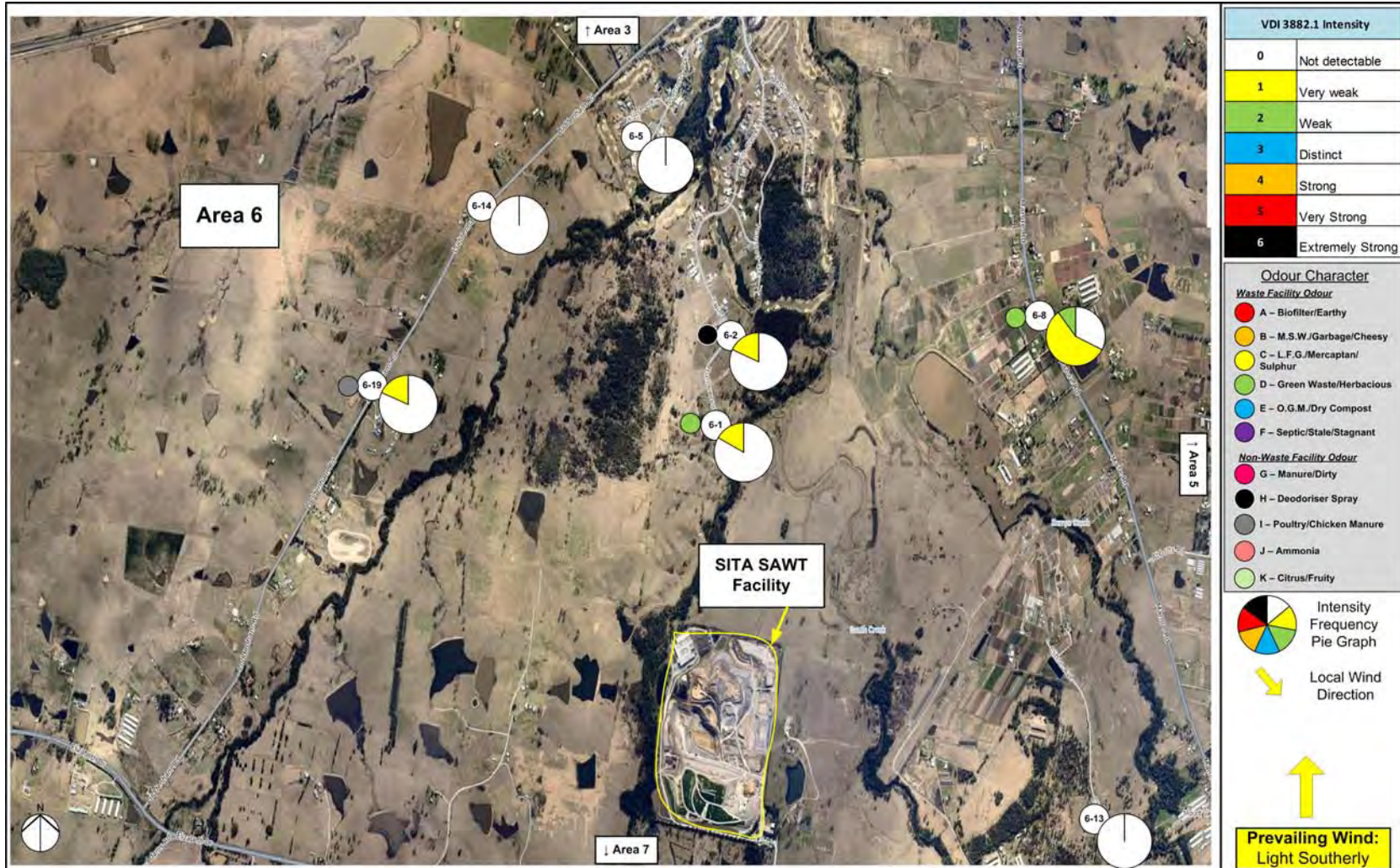
Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 11/09/12 Session Time: 1715 to 0015
 Area: 3 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: B Date: 20/09/12



Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map (Map source: nearmap)

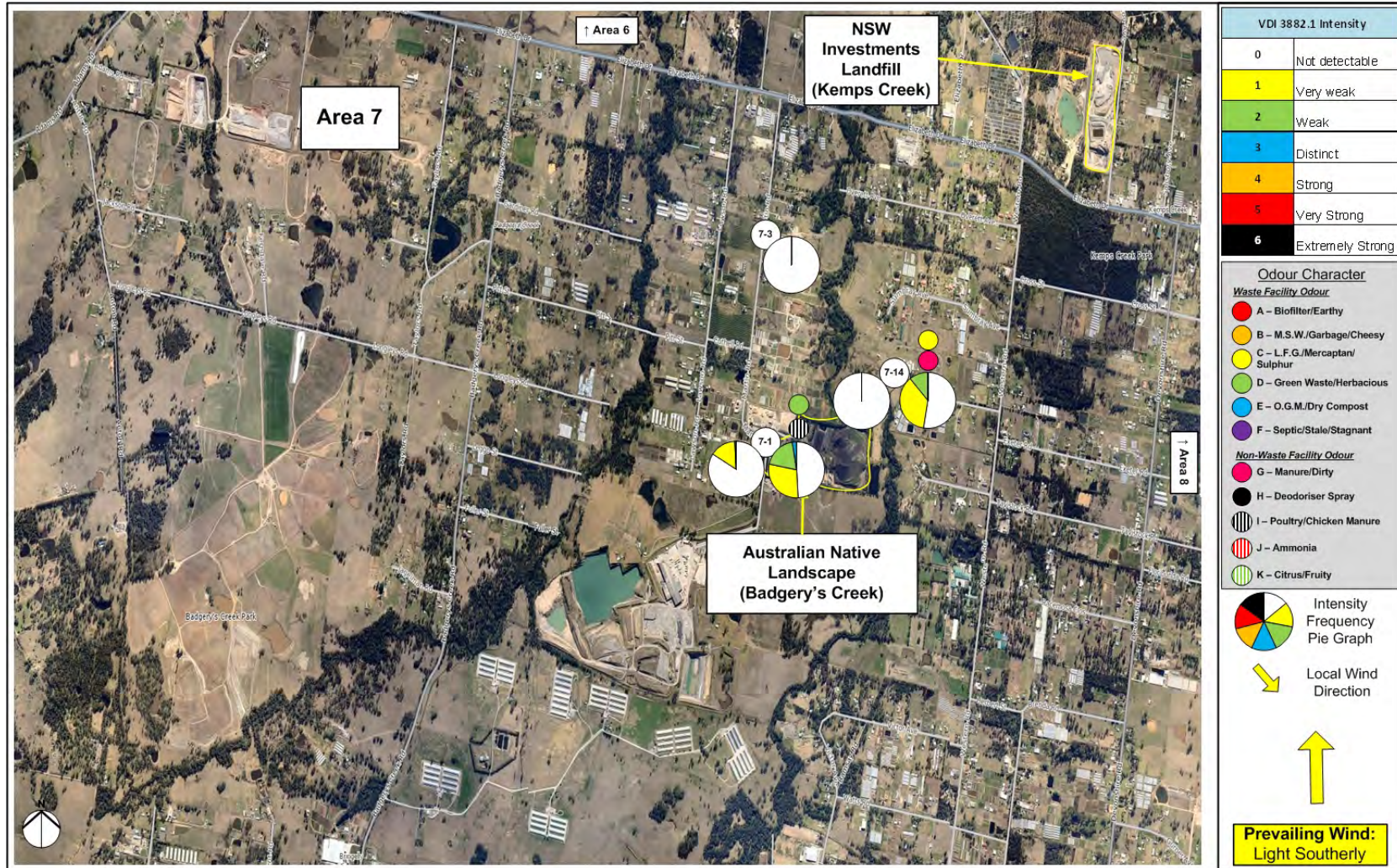
Field Ambient Odour Assessment Survey
 Session Date: 11/09/12 Session Time: 1900 to 0015
 Area: 4 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: B Date: 02/10/12



Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map (Map source: nearmap)

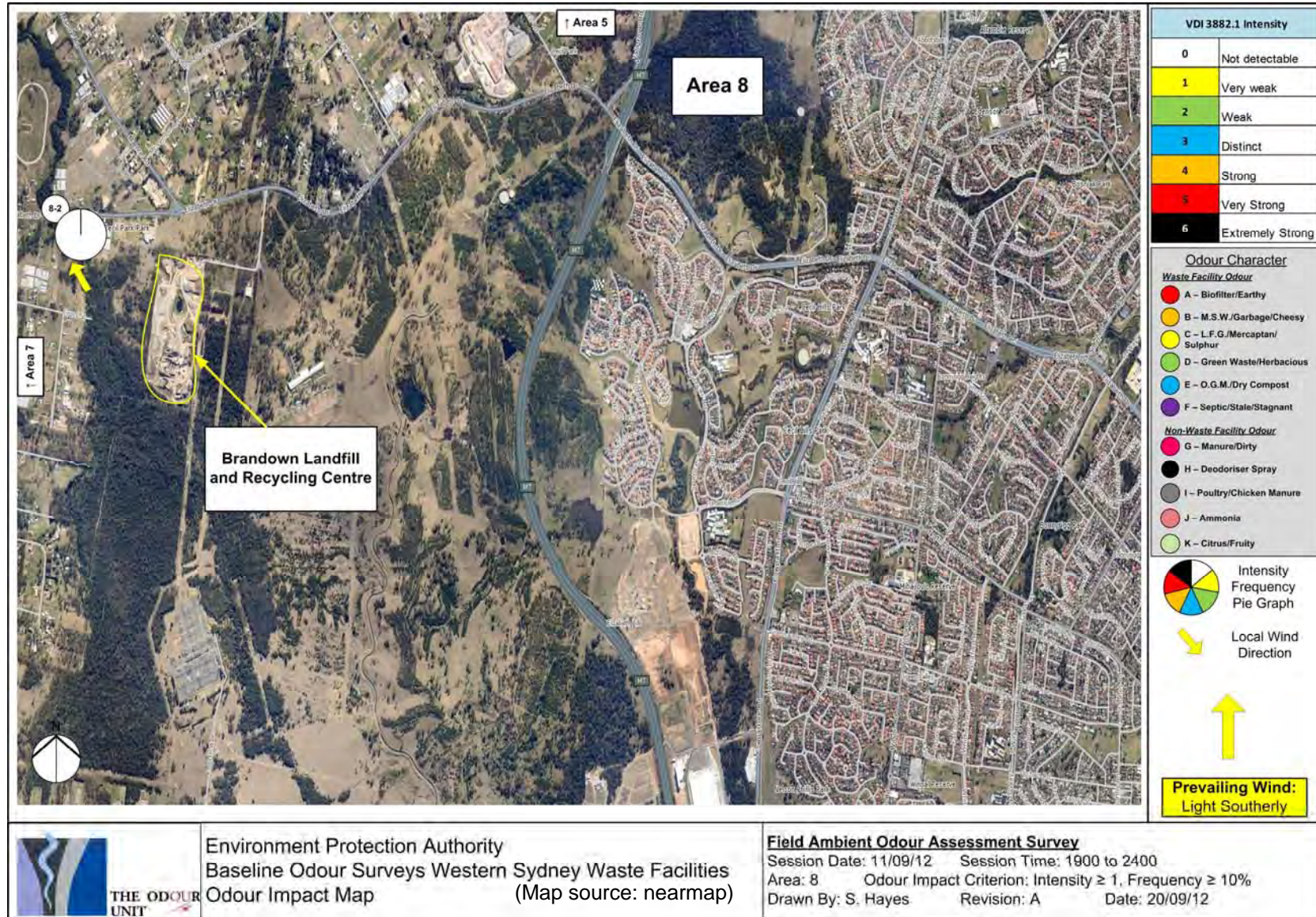
Field Ambient Odour Assessment Survey

Session Date: 11/09/12 Session Time: 1900 to 2400
 Area: 6 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 20/09/12



Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 11/09/12 Session Time: 1900 to 2400
 Area: 7 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 20/09/12



5.11 12 SEPTEMBER 2012 – AFTERNOON

The wind conditions at the time of this assessment session were light winds, tending predominately in the south / south west direction.

Area 3

An on-site visit was carried out at the TPI Enviroguard Landfill (see MLPs 3-31 and 3-37) on this occasion. Very weak to distinct LFG / Mercaptan / Sulphur odour was detectable during this visit (MLP 3-31), however, not detectable anywhere else on-site (see MLP 3-37). A downwind assessment immediately following the visit indicated no odours were detectable downwind of the TPI Enviroguard Landfill (MLP 3-22) on this instance.

Area 4

An on-site assessment was carried out at the WAMC Landfill Facility on this occasion. Very weak to strong odour intensities of MSW / Garbage / Cheesy and LFG / Mercaptan / Sulphur odour were detectable downwind of this facility during the visit. These odours were also detected further downwind, off-site at MLPs 4-6, 4-7, 4-8 and 4-58, and likely originating from the WAMC Landfill Facility.

Greenwaste/herbacious and Biofilter / Earthy odours were also detectable at these regions and were likely emanating from Global Renewables Facility at the time. There was also detection of LFG / Mercaptan / Sulphur and OGM odour at very weak to distinct intensities at MLP 4-58. These were likely originating from Global Renewables and WAMC Landfill facilities.

At MLP 4-30, Greenwaste/Herbacious and Manure / Dirty odours were detectable at very weak to strong odour intensities, and could have originated from a combination of piggeries and horticultural farms residing in the region. Additional, the Betta Burn Firewood Horsley Park centre could have also contributed to this. The odour at this point was not detectable further downwind at MLPs 4-35, 4-36, 4-38, 4-39, 4-40, 4-43 and 4-62.

Odour was also detectable at MLP 4-66; however, the source could not be accurately determined and appear to have been a localised incident on this occasion.

Area 6

An on-site assessment was carried out at SITA SAWT Facility on this occasion. During that visit, MSW / Garbage / Cheesy and Greenwaste / Herbacious odour were detectable on the immediate boundary, downwind of the facility (at MLPs 6-24, 6-27 and 6-28). Some of these odours were detectable at MLP 6-22 (i.e. Luddenham Rd), and as far as Area 7 (see below for details). Notwithstanding this, detection of these odours appear to have been a localised incident on this occasion as no odours were detected further downwind, west of the SITA SAWT Facility on two occasions (see MLP 6-25).

Area 7

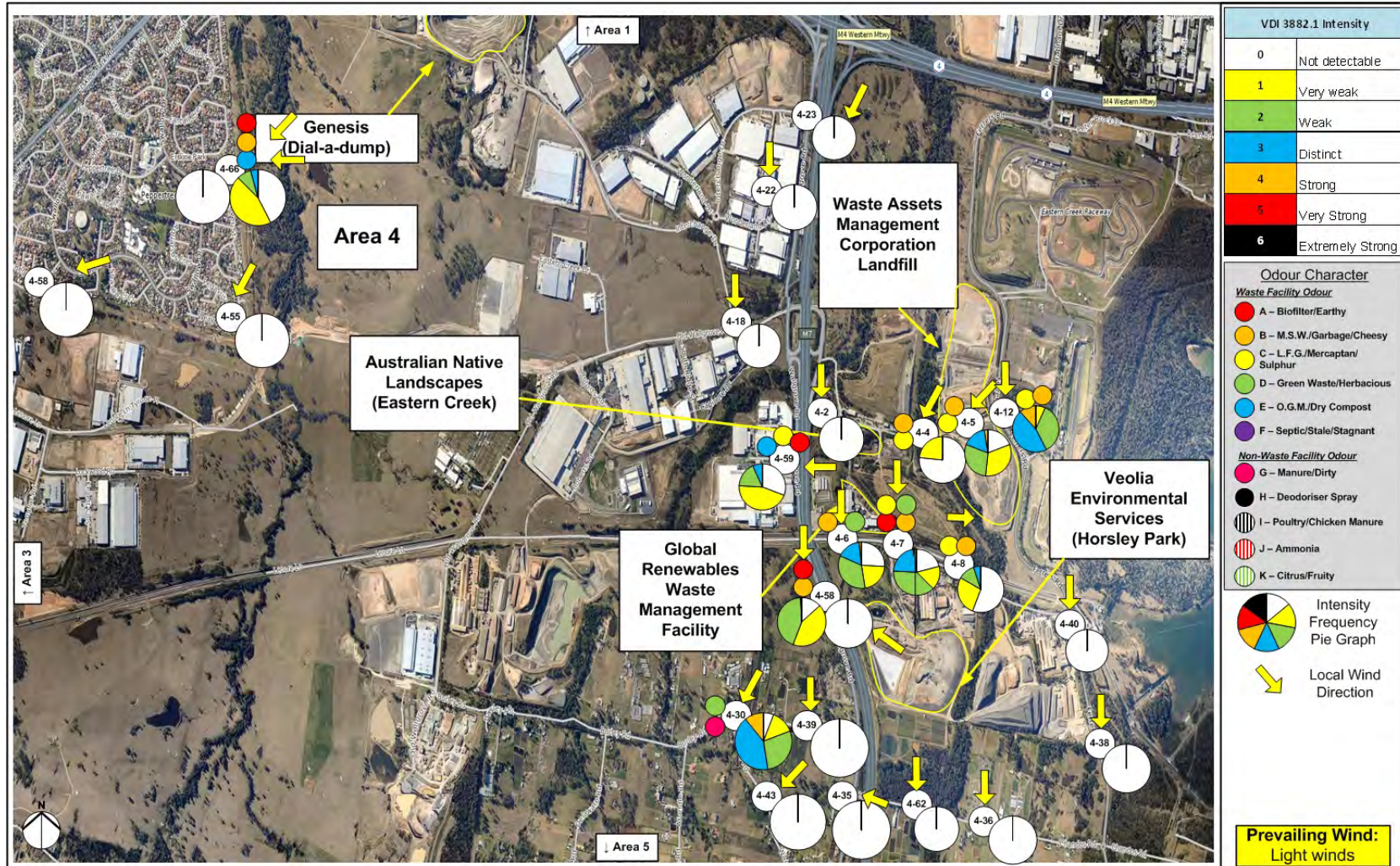
A Greenwaste / Herbacious odour was detectable downwind of the SITA SAWT Facility at MLPs 7-31, 7-30 and 7-7, at very weak to distinct intensities. The likely source would have been the SITA SAWT Facility on this occasion. Additionally, this same odour was detectable, as well as a Manure / Dirty odour on the immediate boundary of the Australian Native Landscapes Facility (see MLP 7.1). On this instance, the source of the Manure / Dirty odour at MLP 7.1 was from the Australian Native Landscapes Facility (Badgery's Creek) Facility and was not detectable further downwind at MLP 7-23.

Some Manure / Dirty and Deodoriser Spray odours were detectable at MLP 7-27 upwind of the NSW Investments Landfill. The source could not be determined on this instance. This odour was not detectable further downwind from this facility (MLP 7-36).



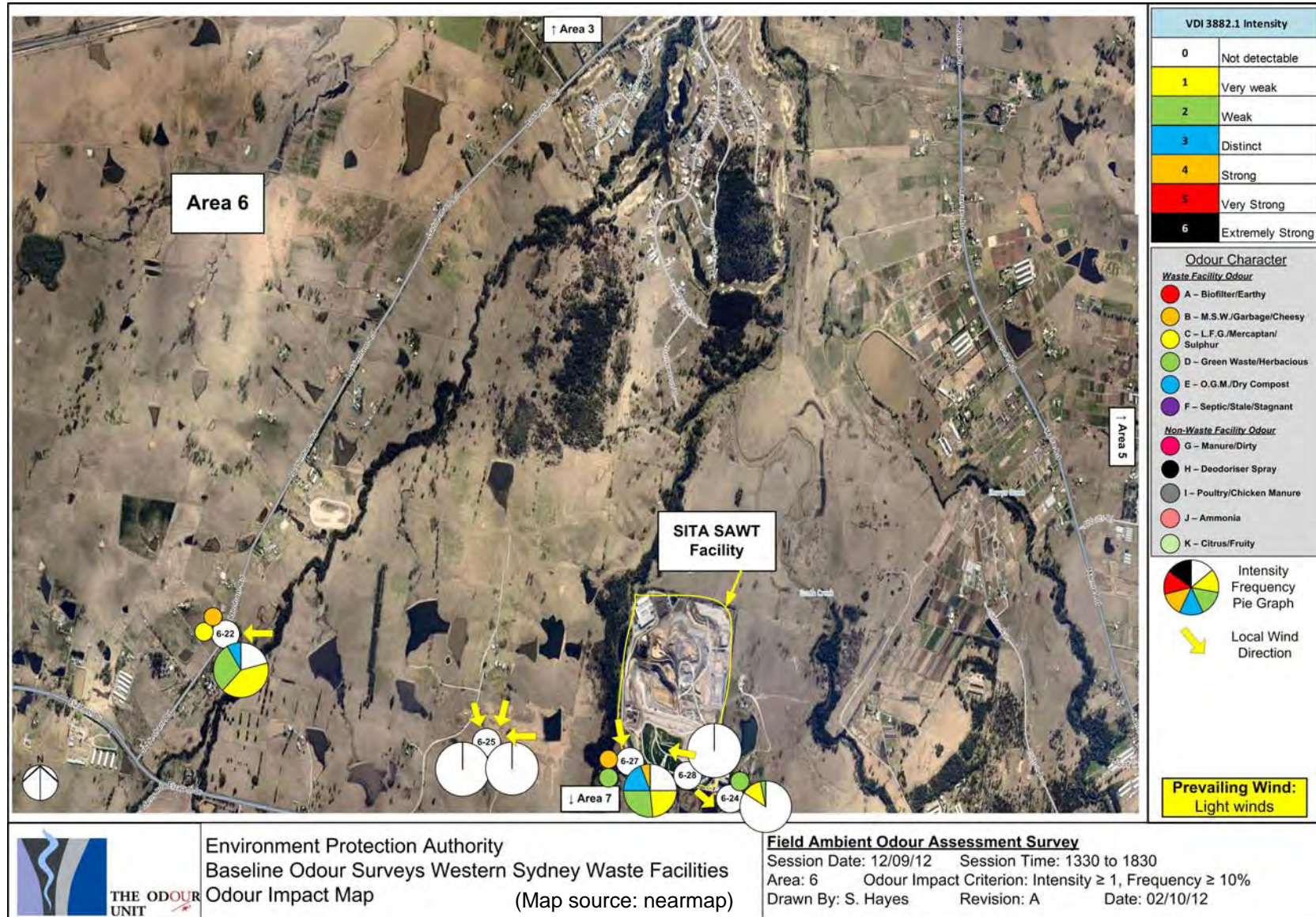
Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map
 (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 12/09/12 Session Time: 1330 to 1830
 Area: 3 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 2/10/12



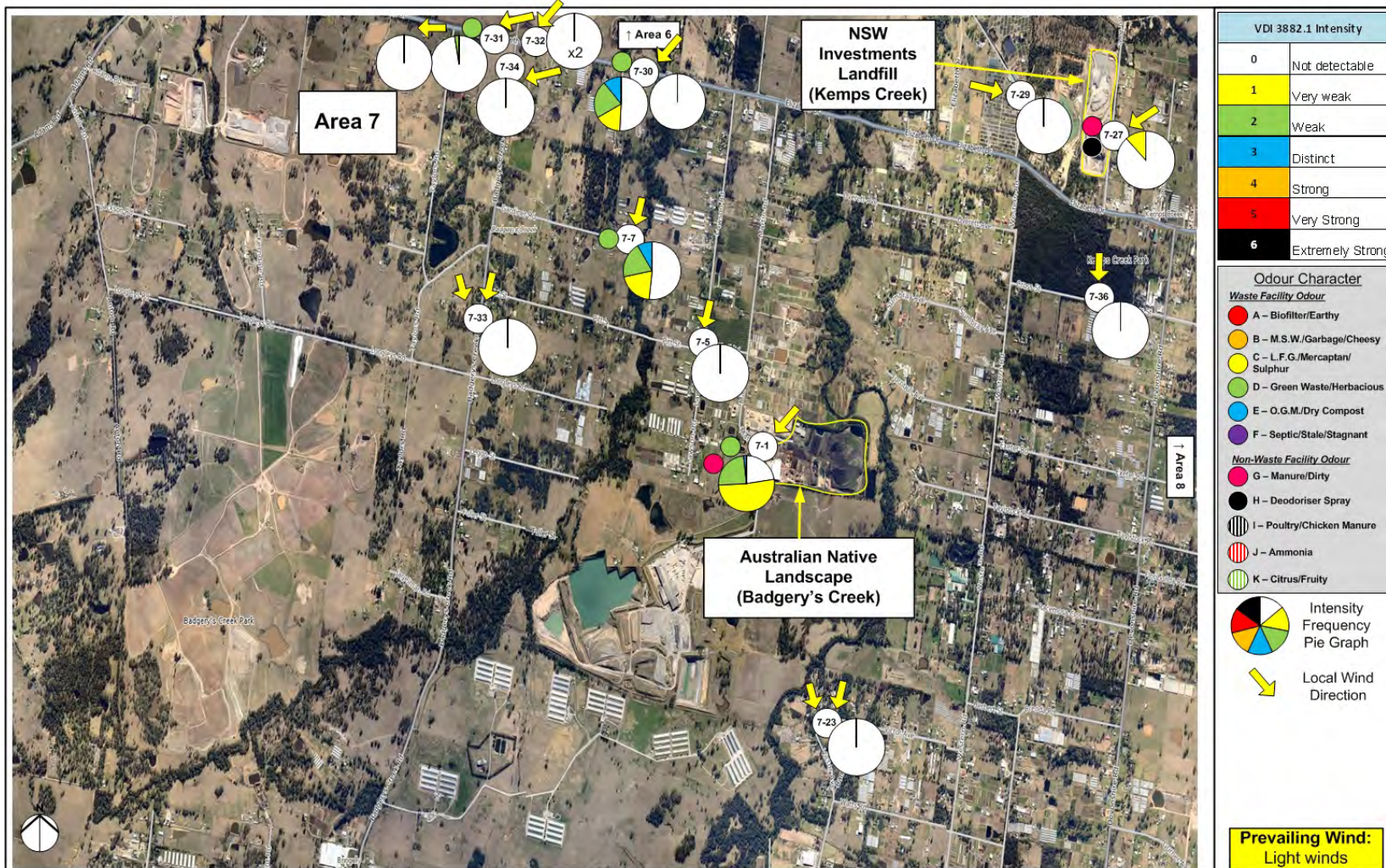
Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map
 (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 12/09/12 Session Time: 1330 to 1830
 Area: 4 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: B Date: 02/10/12



Environment Protection Authority
 Baseline Odour Surveys Western Sydney Waste Facilities
 Odour Impact Map
 (Map source: nearmap)

Field Ambient Odour Assessment Survey
 Session Date: 12/09/12 Session Time: 1330 to 1830
 Area: 6 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10%
 Drawn By: S. Hayes Revision: A Date: 02/10/12



	Environment Protection Authority Baseline Odour Surveys Western Sydney Waste Facilities Odour Impact Map (Map source: nearmap)	Field Ambient Odour Assessment Survey Session Date: 12/09/12 Session Time: 1330 to 1830 Area: 7 Odour Impact Criterion: Intensity ≥ 1, Frequency ≥ 10% Drawn By: S. Hayes Revision: A Date: 02/10/12
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5.12 LIKELY SOURCES OF NON-WASTE BASED FACILITY ODOURS

Over the course of the assessment period, there were events during the survey where odours were detected however could not be linked back to the facilities. Instead, these odours were found to be emanating from horticultural and farming activities within the assessment areas, particularly 4, 6 and 7. **Table 5.2** summarises the incidences when a non-waste facility odour was detectable and likely originating from horticultural and farming based activities.

Table 5.2 – Non-waste facilities odour locations

Date	Session	Location Point	Location details	Odour character	Likely source
3 September 2012	Morning	7-25	Intersection of Ramsay Rd and Watts Rd, Badgery's Creek	Manure / Dirty	Piggery Farm
	Evening	6-22	Luddenham Rd, Kemps Creek	Manure / Dirty	Piggery Farm
		7-24	Intersection of Martin Rd and Elizabeth Drive Kemps Creek	Manure / Dirty and Poultry / Chicken Manure	Poultry and Piggery Farms
4 September 2012	Evening	4-29	Intersection of Lenore Lane and Wallgrove Rd Eastern Creek	Poultry / Chicken Manure	Poultry farm
	Evening	7-1	End of Martin Rd, Badgerys Creek	Poultry / Chicken Manure	Poultry farm
5 September 2012	Morning	4-62	Chandos Rd and Wallgrove Rd, Horsley Park	Manure / Dirty	Piggery Farm
6 September 2012	Morning	4-63	West of Lenore Lane, Horsley Park	Manure / Dirty	Piggery Farm
	Evening	4-36	Chandos Rd, Horsley Park	Manure / Dirty	Piggery Farm
		6-9	Mamre Rd and Abbots Rd, Kemps Creek	Manure / Dirty	Piggery Farm
		6-10	Along Mamre Rd, between Abbots Rd and Kerrs Rd, Kemps Creek	Manure / Dirty	Piggery Farm
		6-12	End of Clifton Avenue, Kemps Creek	Manure / Dirty	Piggery Farm
		7-15	Western Rd and Braikfield Avenue, Badgery's Creek	Manure / Dirty	Piggery Farm

Table 5.2 continued – Non-waste facilities odour locations

Date	Session	Location Point	Location details	Odour character	Likely source
6 September 2012	Evening	7-18	Western Rd and Herbert St, Badgery's Creek	Manure / Dirty and Poultry / Chicken Manure	Piggery and Poultry Farms
10 September 2012	Evening	4-60	Wallgrove Rd (West of Veolia Environmental Services)	Poultry / Chicken Manure	Poultry Farms
11 September 2012	Evening	4-60	Wallgrove Rd (West of Veolia Environmental Services)	Greenwaste/ Herbacious	Betta Burn Firewood Horsley Park centre
		7-14	Intersection of Western Rd, Badgerys Creek and Turnbull Avenue	Manure / Dirty	Piggery Farm
12 September 2012	Evening	4-30	Walworth Rd and Burley Rd, Horsley park	Manure / Dirty	Piggery Farm
				Greenwaste/ Herbacious	Betta Burn Firewood Horsley Park centre
		7-1	End of Martin Rd (near Australian Native Landscapes Badgerys Creek)	Manure / Dirty	Piggery Farm
		7-27	Clifton Avenue (East of NSW Investments Landfill Kemps Creek)	Manure / Dirty	Piggery Farm

6 DISCUSSION

In general, the results from this study indicate that moderate to significant quantities of odour were emanating at times from some but not all of the facilities during the survey assessment period. The calm to light wind conditions over the course of this study may not have provided the worst case scenario for adverse impacts or odour movement. However these relatively light winds were found to still result in odour movement off-site from several facilities into the community, due to the sensitivity of the assessment methodology, and despite a general finding of relatively low intensities of waste-based odour beyond the plant boundaries. This study finds it reasonable to qualitatively extrapolate survey findings under light wind conditions to winds of stronger intensity, as it is to project what is likely to happen if odour emission rates from the waste facility sources were to be greater than those prevailing during the survey period. Notwithstanding this position, a repeat assessment study similar to this study but under different wind conditions would be beneficial and is recommended.

It is considered that the study has been a useful first step in the process of developing strategies for reducing waste-related odour emissions and impacts in the Western Sydney region. Under the conditions investigated it has generated data that quantify the extent of odour movement beyond the boundaries of the facilities within the Eastern Creek, Kemps Creek and Erskine Park Precincts. It has also identified those waste facilities that may be able to be ruled out as a source of the previous adverse odour impacts, as well as a number of agricultural-based odours that could perhaps be confused for waste-derived odours.

In determining the likely sources of the waste-based odours detected, TOU drew upon its field experience gained over the course of the study, familiarity of the waste facilities during the reconnaissance visit and experience in the waste industry. Every attempt was made to accurately determine the likely source/s of a detected odour. This was achieved by evaluating the odour quality, location where odour was detected and getting upwind and downwind of the facility as a means of gauging the likely sources. This applies to all findings in this study.

6.1 MAIN FINDINGS

Based on the surveys carried out, this study identified three waste facilities that were found to be emitting odour detectable at significant intensities beyond their boundaries. These were:

- Global Renewables Facility Eastern Creek;
- Waste Management Assets Corporation Landfill Eastern Creek; and
- SITA SAWT Facility Kemps Creek.

Details on the off-site impact from each facility have been described in the proceeding sections.

6.2 LIKELY SOURCES OF WASTE-BASED FACILITY ODOURS

6.2.1 Global Renewables Facility Eastern Creek

There were multiple occasions in Assessment Area 4 where odours were detected beyond the boundary and determined to be likely emanating from the Global Renewables Facility. On most occasions these events occurred near the Eastern Creek Precinct, however, on few occasions the odours were detected further downwind. Significant odour events attributed to this facility included:

- **4 September Evening:**
 - **Assessment Area 4:** odour was detected at weak to distinct intensities; approximately 500 metres west of the Global Renewables Facility (see MLPs 4-1, 4-18 and 4-59). A myriad of odour characters were detectable including MSW / Garbage / Cheesy, Biofilter/Earthy and Greenwaste/Herbacious. As mentioned in **Section 5.4: Area 4**, the MSW / Garbage / Cheesy odour detected on the western and eastern sectors of the Eastern Creek Precinct could have been a shared contribution between the Global Renewables Facility and WAMC Landfill, given the quality and location of this odour detected by the assessors on this instance.

▪ **5 September Evening:**

- **Assessment Area 4:** odour was detected on this instance at very weak to strong intensities beyond the boundary. The odour characters were a combination of Biofilter/Earthy and MSW / Garbage / Cheesy. The odours were found to travel approximately 1.5 km from the southern boundary of the Global Renewables Facility. The biofilter emissions were judged to be the main contributor (see MLPs 4-6, 4-63, 4-60, 4-41, 4-35 and 4-62)

▪ **11 September Evening:**

- **Assessment Area 1 and Area 4:** Biofilter/Earthy and Ammonia based odour was detectable on-site the Global Renewables Facility at MLP 4-68. This same odour was detectable further downwind, northwest of the site at MLPs 1-34 and 1-35 (representing 3.5 km in distance from the site). A weak to strong Greenwaste/Herbacious odour was also detectable downwind at MLP 4-3.

To summarise, over the course of the study the type of odours detected near and beyond the boundary of the Global Renewables Facility included:

- Biofilter / Earthy;
- Ammonia;
- MSW / Garbage/Cheesy;
- Greenwaste / Herbacious; and
- OGM.

Advice from Global Renewables during the surveys was that the biofilter was mid-way through a refurbishment program, in which the biofilter medium was being replenished with new material. This activity was evident to the assessment team. Significantly,

the odours downwind of the facility appeared to decrease in the second week of the project.

6.2.2 Waste Management Assets Corporation Landfill

There were multiple occasions in Assessment Areas 1, 3 and 4 where the WAMC Facility released odours that were readily detectable beyond the site boundary. These events were mostly near the Eastern Creek Precinct, however, on some occasions the odours extended further downwind.

Significant odour events attributed to this facility included:

- **3 September Evening:**
 - **Assessment Area 1 & Area 4:** odours were detectable in Assessment Area 4 and extended to Area 1 (i.e. from MLP 4-15 to MLP 1-30). This equates to approximately 1.5 km in distance. The odours detectable were generally very weak to distinct, becoming weaker as the assessors traversed downwind and had both MSW / Garbage / Cheesy and LFG / Mercaptan / Sulphur odour characters.

- **4 September Evening:**
 - **Assessment Area 4:** very weak to distinct intensities of MSW / Garbage / Cheesy and LFG / Mercaptan / Sulphur odour were detectable beyond the boundary at very weak to distinct intensities at the time, prevailing along Ferrers Rd. These odours were also detectable further downwind, approximately 1 km from the site's northern boundary (see MLPs 4-16 and 4-17). As mentioned in **Section 5.4: Area 4**, the MSW / Garbage / Cheesy odour detected on the western and eastern sectors of the Eastern Creek Precinct could have been a shared contribution between the Global Renewables Facility and WAMC Landfill, given the quality and location of this odour detected by the assessors on this instance.

- **10 September Evening:**
 - **Assessment Area 1 & Area 4:** very weak to strong MSW / Garbage / Cheesy and LFG / Mercaptan / Sulphur odour was detectable downwind of the WAMC Landfill, and detectable for up to 2 km northeast of the facility (see MLPs 4-11, 4-14, 4-16, 4-17 and 1-31).

- **11 September Evening:**
 - **Assessment Area 1 & Area 4:** very weak to strong MSW / Garbage / Cheesy and LFG / Mercaptan / Sulphur odour was detectable downwind of the WAMC Landfill, and detected for up to 3 km northeast of the facility (see MLPs 1-32 and 1-34).

To summarise, over the course of the study the type of odours detected near and beyond the boundary of the WAMC Landfill Facility included:

- MSW / Garbage / Cheesy; and
- LFG / Mercaptan / Sulphur.

6.2.3 SITA SAWT Facility Kemps Creek

There were multiple occasions in Areas 3, 6 and 7 where the SITA SAWT Facility's odours were detected beyond the boundary. These impacts were generally near the Kemps Creek Precinct and, on one occasion, extended to the Erskine Park Precinct.

Significant odour events attributed to this facility included:

- **3 September Morning**
 - **Assessment Area 6:** there were multiple types of odours detected on this occasion north of the SITA SAWT Facility (see MLPs 6-1 to 6-3).

The odour intensity was generally weak to distinct with MSW / Garbage / Cheesy, Greenwaste/Herbacious and Dry Compost odour characters. This represented moderate odour presence in the area and was detectable approximately 1.5 km from the northern boundary of the SITA SAWT Facility. It was likely originating from the SITA SAWT Facility at the time.

- **Assessment Area 7:** there was a very weak to distinct MSW / Garbage / Cheesy odour detected southeast of the SITA SAWT Facility. This odour was detectable 2.5 km away (i.e. from the southern boundary to MLP 7-16). It was likely to have originated from the SITA SAWT Facility at the time.
- **5 September Evening**
 - **Assessment Area 7:** very weak to distinct MSW / Garbage / Cheesy and Greenwaste/Herbacious odour was detectable up to 2 km downwind from the southern boundary of the SITA SAWT Facility.
- **10 September Evening:**
 - **Assessment Area 3 & Area 6:** Greenwaste/Herbacious and MSW / Garbage / Cheesy odour was detectable at MLP 6-5 and 6-7 and further downwind (approximately 5 km downwind of the SITA SAWT Facility) at MLPs 3-21, 3-4 and 3-3 at very weak to weak intensities.

To summarise, over the course of the study the type of odours detected near and beyond the boundary of the SITA SAWT Facility included:

- MSW/Garbage / Cheesy;
- Greenwaste / Herbacious; and
- Dry Compost.

6.3 NON-DETECTABLE WASTE FACILITIES

No odour that could be attributed to the facility was detected outside the boundary of:

- **Brandown Resource Recycling Facility and Landfill:** Examples included Assessment Area 8 on 10 and 11 September 2012 Evening demonstrated no downwind impacts on these occasions
- **NSW Investments Landfill (Kemps Creek):** Examples include Assessment Area 7 on 3 and 5 September 2012 Morning, 4 September Evening and 12 September Afternoon.
- **Dial-a-dump (Genesis) Landfill:** Assessment and 4 on 10 September 2012 and Assessment Area 1 on 1 September 2012
- **Transpacific Industries Landfill (Enviroguard):** Examples include Assessment Area 3 on 4, 10, 11 and 12 September Evening and Assessment Area 4 on 10 & 11 September
- **Veolia Environmental Services (Horsley Park) Landfill:** All occasions where Assessment Area 4 was assessed
- **Australian Native Landscapes (Badgery's Creek):** Odour was only detected at the boundary and did not extend beyond, as demonstrated in Assessment Area 7 results on any occasion. Other agricultural odours were detected in the vicinity of this facility on many occasions. These could easily be confused for the facility's odour emissions.

6.4 OTHER ODOUR SOURCES

During the course of the FAOA surveys, non-waste facility odours were detected that could not be linked back to the facilities within the scope of this study. It was identified that a myriad of farming operations occur in the Eastern Creek and Kemps Creek regions that were found to be emitting moderate intensities of odour. Significantly, it was found that these odours generally did not travel far from the source. The instances where detection of these odours was found are summarised in **Section 5: Table 5.2.**

6.5 LIKELY PROCESS SOURCES OF SIGNIFICANT ODOURS

This study has been able to qualitatively evaluate the extent to which odour is detectable near and far field from the facilities, and identified three facilities as the likely sources of waste-based odours detected during this study. These facilities were identified as:

- Global Renewables Facility;
- SITA SAWT Facility; and
- WAMC Landfill.

As evident from the results presented, the assessment techniques utilised in this study attempted to identify the most likely sources of odours emanating from those facilities that were causing the waste odours detected during this study. This was a difficult task, given the light winds and relatively low ambient odour levels prevailing during this study. Without a follow-up study under more favourable assessment conditions, it is not possible at this stage to definitively link every odour detected with its corresponding source(s). However, in the interests of gaining the maximum benefit at this stage from the data at-hand, the following tables examine the opportunities for mitigating waste-based odours detected during this study. There may be other mitigation options available to those suggested in **Tables 6.1, 6.2 and 6.3.**

Table 6.1 – Global Renewables Facility odours detected, likely on-site process source and mitigation

Waste facility	Odour	Likely on-site process source	Can this odour be mitigated?
Global Renewables Facility	Biofilter / Earthy	Composting Hall Biofilter	It was evident to TOU that GRL was undergoing refurbishment of the biofilter at the time of this study. The decrease in biofilter odours detected in the second week of the study suggests that biofilter odours can be adequately managed at the site
	Ammonia		
	MSW / Garbage / Cheesy	Receival / Separation Hall	Possibly, by improved sealing of buildings, particularly in the evenings
	OGM	OGM Stock Pile	Yes, by reduced stockpile volumes, and also enclosure (if found to be needed)

Table 6.2 – SITA SAWT Facility odours detected, likely on-site process source and mitigation

Waste facility	Odour	Likely on-site process source	Can this odour be mitigated?
SITA SAWT Facility	MSW / Garbage / Cheesy	Unable to be determined	Not until the sources can be identified
	Greenwaste / Herbacious		
	Dry Compost	External maturation stockpiles	Yes, by reduced stockpile volumes, and also enclosure (if found to be needed)

Table 6.3 – WAMC Landfill odours detected, likely on-site process source and mitigation

Waste facility	Odour	Likely on-site process source	Can this odour be mitigated?
WAMC Landfill	MSW / Garbage / Cheesy	Fugitive active tip face area emissions	Possibly, by improved day cover
	LFG / Mercaptan / Sulphur	Fugitive landfill gas emissions	Yes, by improved landfill gas capture

7 CONCLUSIONS

Overall, the FAOA survey program conducted over the course of this study was successful in developing a baseline odour assessment and evaluating the extent of odour detectable beyond the site boundary of those facilities that could potentially have adverse impact on sensitive receptors. The techniques employed in the surveys were able to quantify and / or qualify the odour intensity, odour character, extent of odour plume and the likely source of odours detected near and far-field from the facilities. The results presented in this study reflect the state of the facilities during the undertaking of the FAOA surveys, and it should not be presumed that they would prevail under similar conditions at any other time.

Based on the assessment results in this study, three waste facilities have been identified to be emitting odours detectable at significant levels beyond the site boundary. These include:

- Global Renewables Facility Eastern Creek;
- WAMC Landfill Eastern Creek; and
- SITA SAWT Facility Kemps Creek.

The study has presented several technically feasible options for odour mitigation for those process sources that are considered as the likely sources of those odours detected from the above facilities. In doing so, it is considered that there is clearly scope for odour emission reduction at each of these facilities. Further assessments would assist in better identifying individual sources, and facilitate the selection of the most appropriate mitigation options.

No odour that could be attributed to the facility was detected outside the boundary of:

- Brandown Resource Recycling Facility and Landfill:
- NSW Investments Landfill (Kemps Creek):

- Dial-a-dump (Genesis) Landfill
- Transpacific Industries Landfill (Enviroguard):
- Veolia Environmental Services Landfill (Horsley Park): and
- Australian Native Landscapes (Badgery's Creek).

The study also identified odours which could not be linked back to the facilities within the scope of this study. The odours detected in this instance were identified to be likely emanating from horticultural and farming activities occurring in the Eastern Creek and Kemps Creek precincts.

A further FAOA survey program under different weather and stronger wind conditions is desirable and is recommended for consideration. It is likely that, under such conditions, odour transport may be more extensive than that experienced during this study, enabling the above findings to be confirmed. It is also recommended that the extensive odour complaint data for the period leading up to this study be analysed to determine whether this data supports the findings of this study.

8 REPORT SIGNATURE PAGE

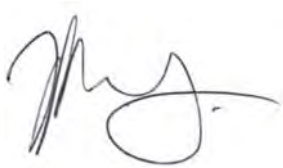
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All maps used in this document have been sourced from Google Maps and nearmap.