

Evaluating Conflict

Interaction assessment of vehicles, cyclists and pedestrians in the Parliament Hill Triangle area

Summary Report for City of London Corporation

March 2010



Summary



This summary report has been prepared for the City of London Corporation to evaluate the current level of risk to users at the Parliament Hill area of Hampstead Heath. It also evaluates the risk associated with the 2008 Parliament Hill Triangle Masterplan.

Users of the Heath rarely experience actual collisions with vehicles or cyclists; however the perception of possible conflicts in the Parliament Hill Triangle is likely to be higher. This may be a result of visitors considering paths to be busier than elsewhere or a single slight incident may stand out in a user's mind. In reality, the factors associated with conflict may be environmentally induced or related to volumes of users and their interactions along each path.

Existing Situation

The overall risk rating of the existing configuration is moderate. The factors that may result in higher levels of conflict include:

- Various obstructions exist, which constrain path widths or create "pinch points". This is a result of excessive railing, barriers, and waiting/parked vehicles. This is a primary concern at the Highgate Entrance.
- The high vehicle and cycle volumes along the Nassington-Highgate link near the entrance from Highgate Road and north of the athletics track, along with the area outside the Parliament Hill depot result in a large number of vehicle encounters by pedestrians.
- There is limited sense of place, orientation ability and inadequate facilities provided at the major node outside the Parliament Hill depot and at the entrances studied, including Highgate Entrance and Lissenden Gardens.

Masterplan Situation

One element of the Masterplan aims to reduce overall interaction between pedestrians, cyclists and vehicles, however conflict is likely to increase at the following sites due to:

- Segregation of the paths along the Lido Path. Although conflict is reduced along the parallel segregated paths, conflict increases at the junctions with the Nassington-Highgate path, the service road to the depot and Lissenden Gardens entrance.
- The vehicle volume increases along the Nassington-Highgate link north of the athletics track would increase the numbers of pedestrians have to vehicles that might have conflict with vehicles.

Although the Masterplan would achieve its objective of reducing conflict, the levels of conflict could be reduced further by retaining a single path, converted to share use, from the Lido to the Nassington-Highgate link. This would minimise the conflict at the Lissenden Gardens entrance and Lido path junction with Nassington-Highgate path, whilst maintaining the benefits of eliminating vehicles at the Highgate entrance. However, this option would not reduce the slightly increased interaction between pedestrians and vehicles north of the athletics track.

Recommendation

In order to minimise the risks to visitors to the Heath, it is recommended that an additional feasibility study is undertaken to evaluate all potential access alternatives and their associated risks of interactions between pedestrians and operational vehicles in the Parliament Hill triangle.



Introduction

Background

Hampstead Heath is a scenic open space in north London, managed by the City of London Corporation (CoLC). It offers an extensive network of paths for walkers and a series of shared use (pedestrian and cyclists) paths. The paths are also used on occasion for maintenance and general operations of the Heath by CoLC and by some delivery, contractor, constabulary and employee vehicles.

There have always been concerns regarding the safety at various access points and paths. This culminated in an incident in 2003, when a contractor's vehicle reversed and fatally injured a member of the public. The CoLC was then fined under the Health and Safety at Work Act of 1974.

After the incident, the Parliament Hill area of the Heath became the focus of concern, as it is a major gateway to the Heath. The Hampstead Heath Management Plan Part I (2007) stressed that a *“review of the pedestrian entry points and conflict between pedestrians and delivery vehicles, especially at Parliament Hill, should be undertaken.”*

One element of the Parliament Hill Triangle Masterplan completed in 2008, in conjunction with Land Use Consultants, sought to limit the potential for conflict in and around the Parliament Hill depot. Based on consultation, the plan recommended elimination of vehicles from Highgate Road and provision of a service road along the existing Lido path and creation of a new parallel pedestrian path. The plan would segregate

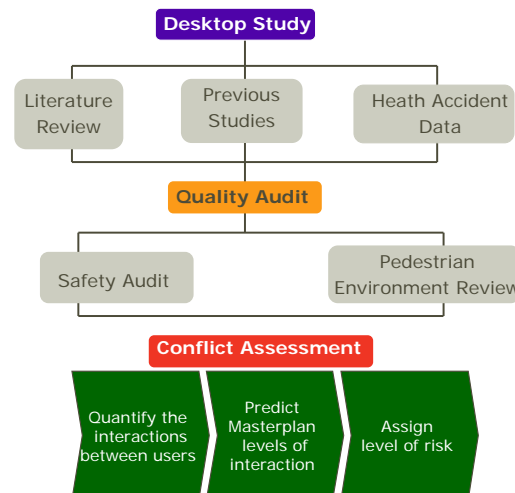


delivery and many of the operational vehicles from pedestrian and some cyclist movements.

Objectives

This study aimed to evaluate the severity of conflict and associated risks within the Parliament Hill area and the changes in the level of risk should the Masterplan be implemented.

Conflict can be influenced by two factors: the surrounding environment and user behaviour. The methodology applied investigated these contributory factors, and took account not just of physical conflict but also of negative perception and the interference that interactions may cause. Conflict was assigned on a nine point scale, with “9” being full contact (actual collision).



The objectives include:

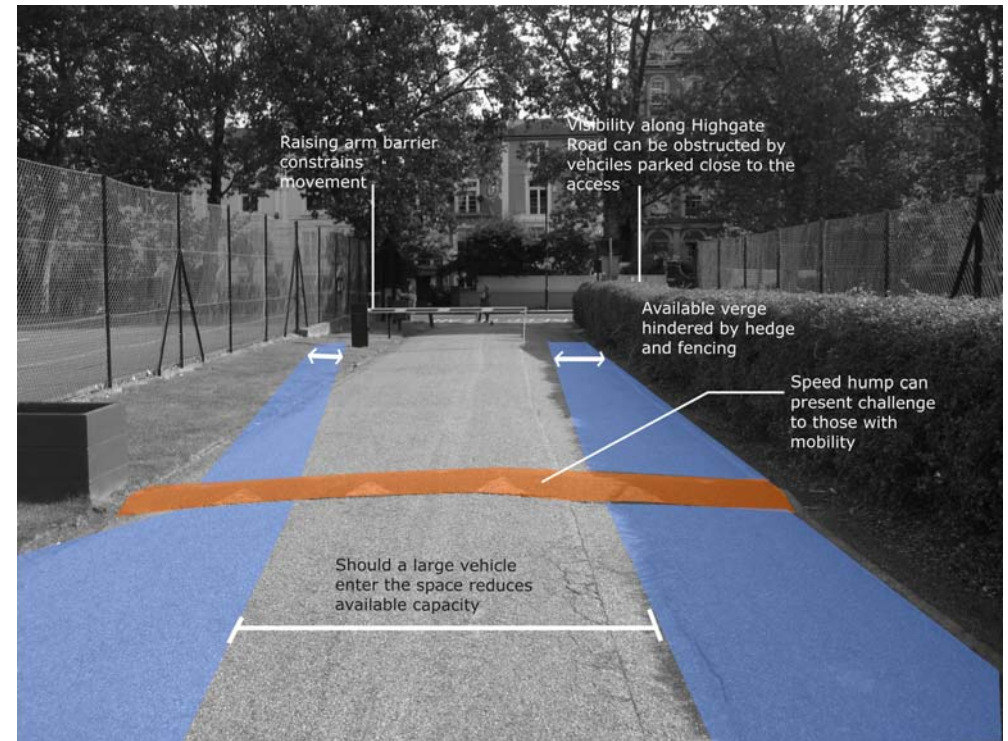
- Evaluate the quality and condition of the facilities around the Parliament Hill Triangle.
- Determine frequency and severity of conflict.
- Estimate the predicted levels of interaction should the Masterplan be implemented.
- Make recommendations for next steps.

Highgate Entrance

The entrance from Highgate Road is extremely popular for pedestrians and cyclists, whilst it also serves as the primary access for vehicles to Parliament Hill depot. It passes between tennis courts and the bowling green, and is bounded by a metal fence and hedge. A lifting arm barrier has been installed to restrict unauthorised vehicles from accessing the Heath.

Key Findings

- EXISTING:** The link is currently **very high risk** as available width for the high volume of pedestrians to use the link is limited by the raising arm barrier, fencing and hedge. Should a vehicle enter the space, pedestrians and vehicles compete for a narrow width.
- MASTERPLAN:** Should the Masterplan be implemented, vehicles would not be allowed to use this link and the barrier would be removed. As such conflict would be substantially reduced to **low risk** as available width for pedestrians would increase.
- Mitigations to the existing situation are strongly advised and should be investigated.**



	Daily Movement									Interaction Frequency						Weekly Visitors Impacted	Risk
	Weekday			Saturday			Sunday			1 or 2	3 or 4	5 or 6	7 or 8	9	Overall		
	P	C	V	P	C	V	P	C	V								
Existing	1516	356	41	4446	429	49	3068	215	13	6.4%	1.0%	4.1%	0.6%	0.0%	12.2%	1840	Very High
Masterplan	2677	378	0	4650	445	0	3294	287	0	1.28%	0.1%	0.3%	0.2%	0.0%	1.8%	384	Low

P=Pedestrians, C=Cyclists, V=Vehicles

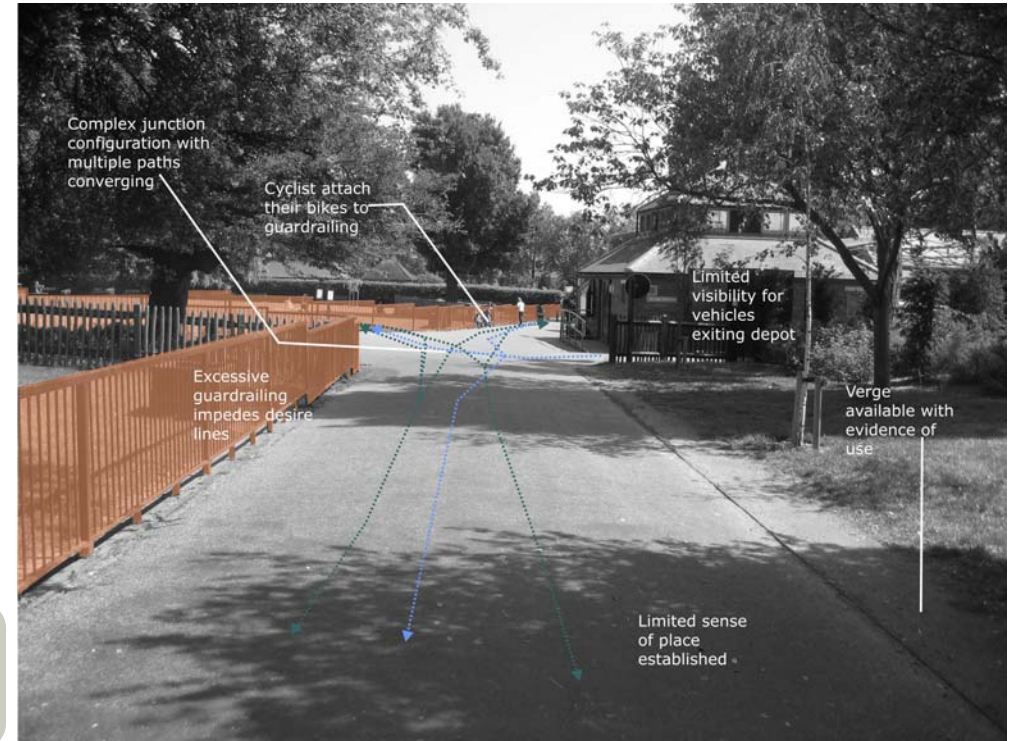
Weekly Visitors Impacted Estimated by (5*Weekday + Saturday + Sunday Volumes) * Probability of Interaction

Parliament Hill Depot

Parliament Hill Depot is the busiest point of pedestrians on the Heath, whilst it also serves as a complex interchange for paths. Access to the Heath's major southern depot is provided off this junction through a restricted gate.

Key Findings

- Conflict is perceived to be most severe at this node, given the highest vehicle, cyclist and pedestrian volumes converging from multiple paths..
- **EXISTING:** The overall potential for risk is **moderate**. Drivers of vehicles using the depot were observed to do so with caution and gave way to pedestrians.
- **MASTERPLAN:** The overall risk for conflict is still **moderate** in the Masterplan scenario, even though vehicles would not access the depot at this point.
- **In order to reduce the risk further at this node, it is advised that guardrailing be rationalised to provide additional refuge for pedestrians and enhance public realm.**



	Daily Movement									Interaction Frequency						Weekly Visitors Impacted	Risk
	Weekday			Saturday			Sunday			1 or 2	3 or 4	5 or 6	7 or 8	9	Overall		
	P	C	V	P	C	V	P	C	V								
Existing	4101	167	99	9179	657	95	6829	480	50	3.5%	0.2%	0.1%	0.1%	0.0%	3.9%	1428	Moderate
Masterplan	4713	215	39	9695	689	30	7465	458	27	2.6%	0.2%	0.1%	0.0%	0.0%	2.9%	1177	Moderate

P=Pedestrians, C=Cyclists, V=Vehicles

Weekly Visitors Impacted Estimated by (5*Weekday + Saturday + Sunday Volumes) * Probability of Interaction

Nassington-Highgate Link

The Nassington-Highgate link extends east-west across the Heath and is a major shared use path by pedestrians, cyclists and operations vehicles. No significant modifications are proposed as part of the Masterplan.

Key Findings

- EXISTING:** Potential for conflict north of the cricket pitch is **low** as significant verge is available. Towards the athletics track, the overall risk increases to **moderate** along the link.
- MASTERPLAN:** In the Masterplan scenario there is **no significant change in level of risk**. The link would experience increases in pedestrian and cyclists flow with the introduction of the Heritage and Interpretation Centre. However the overall risk would not increase, even though additional vehicles would use the link north of the athletics track, given the available width and verge for users.



		Daily Movement									Interaction Frequency						Weekly Visitors Impacted	Risk
		Weekday			Saturday			Sunday			1 or 2	3 or 4	5 or 6	7 or 8	9	Overall		
		P	C	V	P	C	V	P	C	V								
Cricket Pitch	Existing	2246	138	54	5508	439	42	3842	309	27	2.1%	0.4%	0.5%	0.3%	0.0%	3.3%	688	Low
	Masterplan	3320	186	59	5950	473	46	4416	342	34	2.0%	0.8%	0.3%	0.3%	0.0%	3.3%	898	Low
Athletics Track	Existing	1845	392	22	3263	480	9	2264	292	11	6.2%	1.5%	1.0%	0.8%	0.1%	9.2%	1353	Moderate
	Masterplan	2478	428	48	3603	506	32	2706	320	20	7.2%	0.9%	0.9%	0.7%	0.0%	9.5%	1784	Moderate

P=Pedestrians, C=Cyclists, V=Vehicles

Weekly Visitors Impacted Estimated by (5*Weekday + Saturday + Sunday Volumes) * Probability of Interaction

Lido Path

The Lido Path connects the Nassington-Highgate link to Gordon House Road near the Lido. It is flanked by a hedge and open fields to the east and west, respectively. It serves both pedestrians and service vehicles; and although not a designated route, cyclists tend to use the link. In the Masterplan scenario a new pedestrian-only path would be introduced; additionally, a service route would connect the Lido Path with the depot running behind the cricket pitch. To account for a range in potential increases in cycling along the link, estimated increases of 50%, 100% and 150% are presented.

Key Findings:

- EXISTING:** Along the Lido Path itself the available width is sufficient for the pedestrian and vehicle volumes, as such it is currently Low Risk. However at the junctions with the Nassington-Highgate Link the risk increases to Moderate due to the confusing configuration.
- MASTERPLAN:** In the Masterplan scenario, the risk level would be reduced further along the Lido Path given that the modes would be segregated (nb. it was assumed that some cyclists would still illegally use the pedestrian-only path). However risk would increase at both the junctions with Nassington-Highgate Link and the Lissenden Gardens intersections as the junctions become more complicated (see next page).



	Daily Movement									Interaction Frequency						Weekly Visitors Impacted	Risk
	Weekday			Saturday			Sunday			1 or 2	3 or 4	5 or 6	7 or 8	9	Overall		
	P	C	V	P	C	V	P	C	V								
Existing	1029	64	13	1373	176	7	989	67	9	4.5%	0.6%	0.9%	0.8%	0.0%	6.7%	503	Moderate
MP (+50% cycles)	1286	114	26	1895	276	32	1121	116	20	4.8%	1.1%	0.7%	0.0%	0.0%	6.6%	628	Moderate
MP (+100% cycles)	1286	152	26	1895	368	32	1121	154	20	5.3%	1.4%	0.7%	0.0%	0.0%	7.3%	694	Moderate
MP (+150% cycles)	1286	190	26	1895	460	32	1121	193	20	5.4%	1.5%	0.7%	0.0%	0.0%	7.6%	716	Moderate

P=Pedestrians, C=Cyclists, V=Vehicles

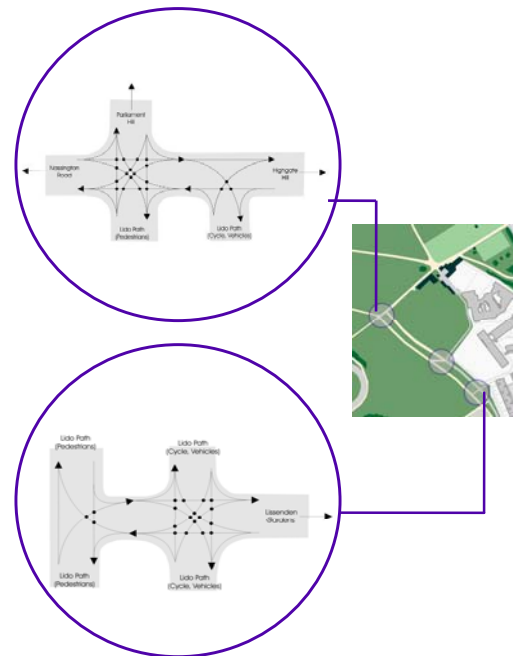
Weekly Visitors Impacted Estimated by (5*Weekday + Saturday + Sunday Volumes) * Probability of Interaction

Lido Path Junctions

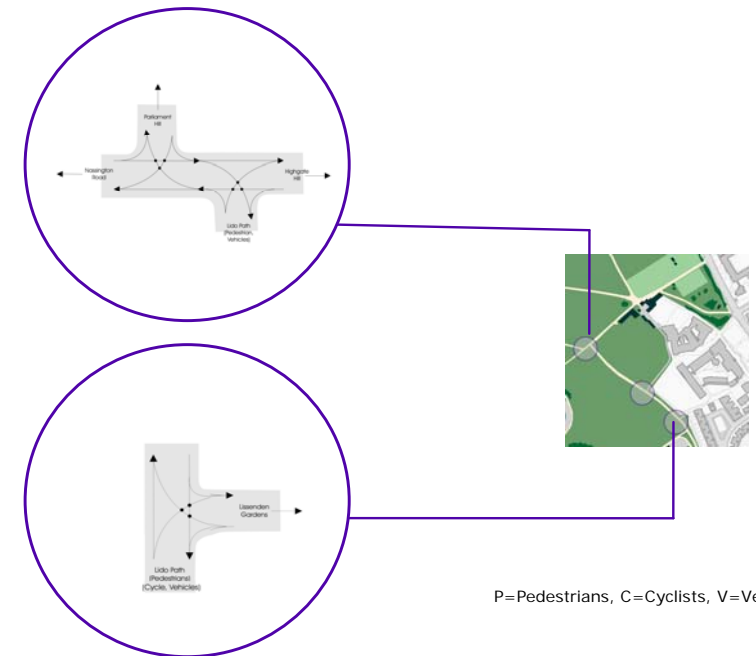
To reduce the conflict potential at the Lido Path junctions, it is recommended that a shared use path be considered.

■ **MASTERPLAN SHARED USE VARIATION:** The number of interactions along the Lido Path would increase, however the overall risk would remain **moderate**. The junction with Lissenden Gardens entrance would still be **low** with a shared use arrangement. The junction with Nassington-Highgate Link is **moderate** but this could be further reduced depending on junction configuration.

Masterplan: Segregated Paths Junction Configuration



Masterplan: Shared Use Path Junction Configuration



P=Pedestrians, C=Cyclists, V=Vehicles

Lido Path Junction with:		Daily Movement									Interaction Frequency							
		Weekday			Saturday			Sunday			1 or 2	3 or 4	5 or 6	7 or 8	9	Overall	Weekly Visitors Impacted	Risk
		P	C	V	P	C	V	P	C	V								
Nassington-Highgate	Existing	256	368	49	5071	466	29	4033	286	31	1.4%	0.2%	0.0%	0.0%	0.0%	1.7%	369	Low
	Masterplan	319	170	111	5531	502	53	4607	301	7	2.9%	1.0%	0.0%	0.0%	0.0%	4.0%	1031	Moderate
	Shared -use	319	170	111	5531	502	53	4607	301	7	1.7%	0.6%	0.0%	0.0%	0.0%	2.3%	598	Moderate
Lissenden Gardens	Existing	131	67	13	2004	192	7	1088	73	10	0.4%	0.1%	0.1%	0.1%	0.1%	0.7%	66	Low
	Masterplan	131	67	11	2004	200	7	1088	85	10	2.6%	0.5%	0.4%	0.6%	0.4%	4.4%	428	Moderate
	Shared -use	131	67	11	2004	200	7	1088	85	10	0.5%	0.1%	0.1%	0.1%	0.1%	0.8%	81	Low

Conclusion

Conclusions

Overall the existing risk is moderate. This implies that **5 in 100** visitors to the Parliament Hill Triangle area of the Heath have an encounter with a vehicle or cyclist. With the Masterplan proposal, this number could be decreased to **4 in 100** visitors, and further to **3 in 100** visitors with the shared use of the Lido Path.

More localised results are as follows:

Highgate Road Access

- Frequency and severity of interaction needs to be mitigated at this location as it is **Very High Risk** at present.
- It is possible to mitigate some issues in existing layout but the Masterplan would provide longer term solution and reduce overall risk to **Low**.

Parliament Hill Depot

- Conflict between pedestrians, cyclists, and vehicles is *perceived* to be the most severe in the area outside the depot, although associated risk is **Moderate**.
- Risk would be reduced with Masterplan implementation, however it would still be **Moderate** due to the increase in pedestrian and cyclist flows generated by the opening of the Heritage and Interpretation Centre.

Nassington-Highgate Link

- Current risk level is **Low**, with users taking advantage of the grass verge and adequate sight lines to avoid conflict.
- The number of incidents is anticipated to increase along the link because of the increase in vehicle, pedestrian and cyclist flows; however the frequency and severity of these events would not increase significantly.

Lido Path

- Currently risk is **Moderate** although severe interactions are infrequent.
- The masterplan as proposed would reduce interactions through segregated paths but over-complicates junctions. A shared use Lido Path would reduce overall interaction by simplifying junctions.

Recommendations

Based on the current proposals we recommend:

- A feasibility study to evaluate all potential alternatives to minimise risk;
- Mitigate current situation at the Highgate Entrance; and
- Reduce overall guardrailing and fencing, and increase sightlines.

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Abu Dhabi

AS Business Centre, First Floor, Suites 201-213, Al Ain Road, Umm al Nar, P.O. Box 129865, Abu Dhabi, UAE
T: +971 2 558 9809 F: +971 2 558 3809

Birmingham

Second Floor, 37a Waterloo Street, Birmingham, B2 5TJ, United Kingdom
T: +44 (0)121 233 7680 F: +44 (0)121 233 7681

Dubai

PO Box 123166, 803-805 Arbift Tower, Baniyas Road, Deira, Dubai, UAE
T: +971 (0)4 223 0144 F: +971 (0)4 223 1088

Dublin

1st Floor, 12/13 Exchange Place, IFSC, Dublin 1, Ireland
T: +353 (0)1 542 6000 F: +353 (0)1 542 6001

Edinburgh

Stewart House, Thistle Street, North West Lane, Edinburgh EH2 1BY United Kingdom
T: +44 (0)131 220 6966 F: +44 (0)131 220 6087

Glasgow

Seventh Floor, 78 St Vincent Street, Glasgow G2 5UB United Kingdom
T: +44 (0)141 225 4400 F: +44 (0)141 225 4401

Email: info@mvaconsultancy.com

Offices also in

Bangkok, Beijing, Hong Kong, Shenzhen and Singapore

London

Second Floor, 17 Hanover Square
London W1S 1HU, United Kingdom
T: +44 (0)20 7529 6500 F: +44 (0)20 7529 6556

Lyon

11 rue de la Republique, 69001 Lyon, France
T: +33 (4) 72 10 29 29 F: +33 (4) 72 10 29 28

Manchester

25th Floor, City Tower, Piccadilly Plaza, Manchester M1 4BT United Kingdom
T: +44 (0)161 236 0282 F: +44 (0)161 236 0095

Marseille

76 rue de la Republique, 13002 Marseille, France
T: +33 (4) 91 37 35 15 F: +33 (4) 91 91 90 14

Paris

12-14, rue Jules Cesar, 75012 Paris, France
T: +33 (1) 53 17 36 00 F: +33 (1) 53 17 36 01

Woking

Dukes Court, Duke Street, Woking
Surrey GU21 5BH United Kingdom
T: +44 (0)1483 728051 F: +44 (0)1483 755207

mvaconsultancy