

MUNICIPAL YEAR 2016/2017 REPORT NO.

**ACTION TO BE TAKEN UNDER
DELEGATED AUTHORITY**

OPERATIONAL DECISION OF:
Director – Regeneration
and Environment

Agenda – Part: 1	KD Num: 4287
Subject: Waterproofing and Re-design Works to Balcony Floors and Rainwater outlets to five blocks located at Joyce Avenue Estate.	
Wards: Upper Edmonton	

Contact officer and telephone number: Maria Hitches – 020 8375 8226

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1. EXECUTIVE SUMMARY

- 1.1 This report recommends that the quotation provided by Millane Ltd is accepted for the Private Balcony Waterproofing and Rainwater Outlet works to individual private balconies at Gilpin Crescent, Wadham House and Joyce Avenue.

2. RECOMMENDATIONS

- 2.1 To approve the competitive tender submitted by the recommended contractor (Millane Building Services) as it demonstrates value for money and was tendered in accordance with the guidelines stipulated under the Council's contract procedure rules (CPR's).
- 2.2 To place the order for the commencement of the works within the 2016/17 HRA Planned Maintenance Programme.
- 2.3 To undertake waterproofing works to the private balconies of five no: blocks on the Joyce Avenue Estate including some re-design of the balcony outlets and rainwater drainage runs.

3. BACKGROUND

- 3.1 The relevant blocks are 2-90, 128-216 and 254-342 Joyce Avenue, 1-14 Gilpin Crescent and 1-45 Wadham House. These are all 7-storey blocks of similar design with communal balconies to the front and private balconies to the rear. The works outlined in this report are restricted to the private balconies only.
- 3.2 All blocks comprise of ground floor flats with maisonettes above. The first storey has a continuous rear balcony separated only by a fixed glazed metal frame panels that individualise those balcony areas with the relevant properties. The remaining storeys have staggered individual balconies comprising of 14 no. double balconies separated by a glazed screen and 2 no. single balconies. The rainwater and water discharge are serviced by small bore outlet pipe that freely dispels water via an extended pipe from the outer face below the balcony. The existing balcony is reinforced cantilevered concrete slab with asphalt finish which was originally laid to falls.
- 3.3 There is an on-going problem with the current design of the existing balconies does not allow standing or excess water on the balconies to drain away sufficiently. This has caused water to pond on the balconies allowing water ingress to the neighbouring properties below via the bedroom and has led to several complaints of dampness caused by water penetration and subsequent mould and damp conditions by several tenants.
- 3.4 The works are expected to include the following:
- 3.4.1 Improving the drainage of ponding water by upgrading and improving the drainage outlet from each private balcony.
 - 3.4.2 Installing a balcony overlay waterproofing and resurfacing system designed by Triflex to each private balcony.

4. ALTERNATIVE OPTIONS CONSIDERED

- 4.1 The only alternative would be to manage these issues as we are now on a repairs case by case basis rather than via a scheme. It is considered that it would be more economical and efficient to address the issues on a scheme basis as the problem will only get worse and will both put pressure on the repairs budget and resources and will incur more dissatisfied residents.

5. REASONS FOR RECOMMENDATIONS

- 5.1 The current drainage and asphalt covering in place compromises the wellbeing of residents due to matters of water ingress causing damage to property and goods and ponding water reducing the enjoyment of the private balcony area.

5.2 The works allow for the improvement of drainage and waterproofing of the structural elements within the balcony, thus helping to extend the life of this element of the building.

5.3 To limit the instances of water ingress within the individual flats and to reduce levels of complaints and further repairs claims amongst residents.

6. COMMENTS OF THE DIRECTOR OF FINANCE, RESOURCES AND CUSTOMER SERVICES, AND OTHER DEPARTMENTS

6.1 Financial Implications

The quotations for this project have been obtained in compliance with the Council's contract procedure rules and were evaluated on price alone. The detailed financial information is referred to in Part 2 of the Delegated Authority Report documentation. There is sufficient budgetary provision in the HRA Revenue Budget 2016/17 to fund this programme.

6.2 Legal Implications

6.2.1 The list of bidders was compiled using a pre-qualification services allowed within the Council's Contract procedure Rules (CPR's).

6.2.2 The Council must ensure that the services specified and recommended in this report provide best value to the Council in accordance with its best value obligations under the Local Government (Best Value Principles) Act 1999. The Council must keep a clear audit trail of its decision to award these services to the relevant contractor, in order to demonstrate how best value has and will continue to be obtained for the Council.

6.3 Property Implications

6.3.1 The Programme Manager of Strategic Property Services has confirmed that the proposed works are necessary to ensure that the buildings continue to be fit for purpose.

6.3.2 The Head of Development and Estate Renewal has confirmed that no regeneration works are planned for this site for a number of years and that she is happy for these works to proceed.

6.4 Leasehold Implications

6.4.1 The work would affect 105 leaseholders across three blocks and requires statutory consultation. This requirement was fulfilled between 9th and 10th May 2016

6.4.2 The works have been identified as essential for the block, and its cost is recoverable through service charges. Homeownership Services are therefore happy for the work to proceed.

7. KEY RISKS

7.1 Risk: "Budget is not secure, leading to incomplete works"

Control: "Legal Services have prepared a performance bond which will ensure budget is satisfactory and secure. This is to be signed by Legal, the Contractor and their Guarantor"

7.2 Risk: "Delayed commencement may lead to project exceeding time-constraints / project plan becoming inaccurate / further costs / product may not be fit for purpose"

Control: "Specific product selected so that it can be used in most weather conditions (Guaranteed by manufacturer), meaning delays to commencement should not affect quality / project plan / project costs"

7.3 Risk: "Health and Safety risks, including working at heights / asbestos removal"

Control: "The Contractor has been advised that they must comply with all CDM requirements e.g. working at heights, Control of asbestos etc. and also The Contractor must complete a Construction Phased Plan prior to the works commencing to ensure that all the requirements of CDM are met. All work will be monitored until completion. The Council will also undertake a pre-contract meeting with the Contractor to ensure that there are no obvious risk to the public prior to commencement of any works".

8. IMPACT ON COUNCIL PRIORITIES

8.1 Fairness for All - The proposal supports LBE's vision statement in respect of fairness for all and providing value for money services to tenants and leaseholders.

8.2 Growth and Sustainability - The proposal will have a positive impact on the long term sustainability of the housing stock, supporting Enfield's 2020 vision to deliver significant economic, environmental and social benefits for all of Enfield stakeholders.

8.3 Strong Communities - The project promotes the Council vision in line with the Enfield Strategic Partnership of developing more secure environments through the creation of good quality urban design. The proposal supports LBE's vision statement in respect of creating and maintaining homes to a high standard.

9 EQUALITY IMPACT IMPLICATIONS

- 9.1 It is not deemed relevant or proportionate to carry out an equality impact assessment / analysis for the approval of this specific tender.

10 PERFORMANCE MANAGEMENT IMPLICATIONS

- 10.1 Not applicable

11 HEALTH AND SAFETY IMPLICATIONS

- 11.1 The project will be undertaken and completed in accordance with the Construction (Design and Management) Regulations 2015.

12 PUBLIC HEALTH IMPLICATIONS

- 12.1 The proposed works will provide residents with the advantage of having an enhanced social environment that will support their well-being.

Background Papers

(For further guidance on report writing please refer to the Constitution guidance notes available on Enfield Eye

MUNICIPAL YEAR 2016/2017 REPORT NO.

ACTION TO BE TAKEN UNDER DELEGATED AUTHORITY

OPERATIONAL DECISION OF:
Director – Regeneration and Environment

Contact officer and telephone number:

Peter George x 3318 - Peter.george@enfield.gov.uk

Agenda – Part: 1	KD Num: 3973
Subject: Direct Appointment of Cognition Land & Water via Exemption	
Wards: Edmonton	

1. EXECUTIVE SUMMARY

- 1.1 Amec Foster Wheeler have produced a Groundwater Remediation Options Appraisal (ref 34910 RR693i3) for Non Aqueous Phase Liquid (NAPL) recovery from shallow groundwater in the Kempton Park Gravels (KPG) beneath the Willoughby Lane and Meridian Way sites.
- 1.2 The options appraisal was produced in support of the Shallow Groundwater Remediation Strategy for Willoughby Lane and concluded that the NET System was the preferred technology.
- 1.3 The purpose of this technical note is to provide a summary cost and effectiveness comparison of the two most favourable remediation options and to recommend that the NET System be used and therefore the appointment of Cognition Land & Water (Cognition) as the only contactor in the UK who can undertake the work.

2. RECOMMENDATIONS

- 2.1 Based on the remedial objectives, the options appraisal concluded that the NET System is the preferred remediation option for NAPL recovery on the Willoughby Lane and Meridian Way sites.
- 2.2 The recommendation is therefore to appoint Cognition to undertake the work as the only company in the UK that has the authorisation by the Environmental International Corporation (EIC) who own the NET System. The initial contract shall be up to 31st December 2018. In advance of this date, a review of the requirements for additional works (if any) will be undertaken and options for procurements (e.g. extension of proposed contract, further market testing) put forward for consideration.
- 2.3 This NET System is recommended because it has the advantages of:
 - Effective recovery of both light phase (LNAPL) and dense phase (DNAPL) hydrocarbons;
 - Ability to match the rate of recovery to the rate of NAPL inflow into a well, which will result in optimum remediation achievement;
 - Low running costs; portability and limited disruption during soil remediation and development because it can operate on a standalone basis.

3. BACKGROUND

- 3.1 Meridian Water is a pivotal regeneration scheme, which has the potential to accommodate over 10,000 new homes and 6,700 new jobs by 2030. The Meridian Water Masterplan was adopted in 2013 as Planning and Urban Design Guidance - Material Consideration, and provides a framework for the delivery of this new community adopted by the council in July 2013 (Key Decision: 3699).
- 3.2 The Council has concluded on the procurement of a master developer for Meridian Water, and is looking to enter into a legal agreement with Barratt London, the preferred bidder. A remediation framework is currently being established and this will provide remediation services that will enable land to be used for development purposes and the building of houses.
- 3.3 The Willoughby Lane site was formerly used as a town gas works and the Meridian Way (also known as Tear Drop) site as a coal storage area. The sites are to be redeveloped for housing, with areas of public open space and a new railway station. The first phase of construction is intended to be completed by 2018, with further phases to follow.
- 3.4 The ground conditions at the site have been described by Amec Foster Wheeler as Made Ground overlying Enfield Silt, over the Kempton Park Gravels (KPG), over the London Clay. The site history has led to some contamination presence, for which there are remediation strategies to bring the sites into beneficial use. The KPG strata contains shallow groundwater that is impacted with a hydrocarbon, technically referred to as NAPL (Non-Aqueous Phase Liquid); this hydrocarbon either floats (i.e. is lighter than water) or sinks (i.e. is denser than water). LNAPL (Light Non-Aqueous Phase Liquid) is floating on top of the water table and DNAPL (Dense Non-Aqueous Phase Liquid) is present at the base of the KPG strata, i.e. on top of the impermeable London Clay. The NAPL in the KPG had previously been remediated by National Grid Properties via a technique called Total Fluid Abstraction, however, efforts were unsuccessful with respect to the removal of mobile NAPL.
- 3.5 A remedial options appraisal was produced by Amec Foster Wheeler in support of the Shallow Groundwater Remediation Strategy for Willoughby Lane which concluded that the Non-aqueous Extraction Technique (NET) System was the preferred technology to remediate the KPG of mobile NAPL.
- 3.6 The objective of the remediation works is to demonstrate a significant reduction in the amount of NAPL present in KPG at the site. It is not intended to reduce the NAPL to zero presence, an approach that is supported by the Environment Agency.
- 3.7 The remediation options appraisal considered a number of options but the two being considered as most appropriate were Total Fluid Abstraction (TFA) and the NET System, which are discussed in detail below.

3.8 The purpose of this paper is to i) provide a summary cost and effectiveness comparison of the two most favourable remediation options and ii) to recommend that the NET System be used. In addition, this proposal will prescribe in detail the pros and cons of each technique.

3.9 **Benefits of the NET recovery scheme over Total Fluid Abstraction**

Total Fluid Abstraction (TFA) involves pumping a mixture of water and NAPL from the KPG to surface, followed by i) treatment to separate the two; ii) water treatment to meet discharge criteria, and iii) discharge of water to sewer and removal of NAPL to an off-site treatment/disposal facility. TFA was undertaken at the Willoughby Lane Site between 2001 and 2006 and therefore its likely performance and the scale of operations required is well-understood.

3.10 The NET System consists of a continuous loop of a unique absorbent fabric consisting of oleophilic (i.e. has an affinity for hydrocarbons not water) fibres installed in a recovery well containing NAPL. A weighted pulley is used to deploy the loop with its base below the NAPL. The fabric loop is set in motion so that it passes through the NAPL which is then brought to the surface. At the surface the NAPL is removed by squeeze rollers, NAPL is discharged into a container and the process continues. The speed of the loop circulation or width of the fabric can be varied to match NAPL recovery potential..

3.11 The NET system has significant advantages over TFA. These are:

- **Flexibility:** The NET system can be easily and quickly be moved around the site from well to well, whereas TFA requires fixed infrastructure (which would be a constraint to development);
- **Programme:** field trials indicate that NAPL can be recovered relatively quickly using the NET system. In many areas of the site, NAPL recovery will be restricted to less than one year due to the pending development;
- **Waste generation:** the NET system only recovers NAPL, whereas TFA generates large quantities of contaminated waste water that require treatment and expensive disposal;
- **Logistics** (reduced interference with other site activities): The NET system comprises standalone recovery units, which do not require pipes or cables. In contrast, TFA requires significant infrastructure in the form of a power supply and pipework to extract water and NAPL and to direct recovered water and NAPL to a central treatment works - this would be very disruptive during soils remediation and development;
- **Sustainability:** since the NET system does not recover groundwater, the system avoids the need for costly and energy intensive groundwater abstraction, treatment and disposal (unlike TFA);
- **Dewatering Risk:** The NET system does not result in groundwater lowering (unlike TFA) therefore there are no potentially significant impacts on adjacent infrastructure that may be sensitive to dewatering settlement, including the railway and National Grid's PRS;

- **Speed:** The trial of NET at Willoughby Lane has demonstrated its ability to rapidly recover LNAPL and DNAPL whereas an end point was previously not achieved with TFA; and
- **Permitting:** NAPL recovery based on the NET system does not require abstraction or discharge consents, unlike TFA.

3.12 The NAPL remediation strategy using the NET system has been endorsed by the Environment Agency (EA), Appendix 2 provides the justification of the NET system.

3.13 Assessment criteria and scoring detail

The criteria used to evaluate potential NAPL remedial options for this site are set out as follows:

- **Practicability** – practical considerations for implementation and maintenance of the selected remedial strategy, including its long term durability (ranking system: 1 = least practicable, 5 = most practicable);
- **Effectiveness** – ability of the selected technique to meet the remedial objectives and the time taken for remedial objectives to be met (ranking system: 1 = least effective, 5 = most effective);
- **Cost** – a comparison of the relative costs of each remedial method (ranking system: 1 = highest cost, 5 = lowest cost); and
- **Sustainability** – consideration of additional environmental objectives such as consumption of power and water, generation of waste, air and noise pollution, vehicle movements and used of off-site locations such as landfills (ranking system: 1 = least sustainable, 5 = most sustainable).

3.14 Table 2.1 presents a matrix in which the two shortlisted NAPL remedial options selected are ranked for each of the four assessment criteria listed above.

Table 2.1. Assessment criteria and score (out of 5)

Technique	LNAPL		DNAPL		LNAPL+DNAPL		Total
	Practicability	Effectiveness	Practicability	Effectiveness	Cost	Sustainability	
Total fluids abstraction (TFA)	3	4	2	4	3	3	19
NET System	5	4	4	4	4	5	26

4. Cost comparison

4.1 The detailed cost comparison of both of these systems can be found in Part 2 of this report.

4.2 A number of assumptions have been made in deriving the scope and cost estimate of deploying this system at Willoughby Lane and Meridian Way. If any of the assumptions turn out to be incorrect, some aspects of the scheme may

require amendment, upscaling or prolonging, which is likely to lead to an increase in costs. Below can be found the assumptions made in respect of both systems

4.3 **NET system** – The costed scope is based on the following assumptions:

- 10 No. NET units installed within up to 94 (No.) newly drilled and installed recovery or monitoring wells on Willoughby Lane and Meridian Way will be suitable site coverage to allow recovery of NAPL across the site. It is doubtful all the wells will be needed, thus it would represent a cost saving potential.
- NAPL recovery will be completed within one year in some areas of the site, extending to two and possibly three years in certain areas.

4.4 Information on costs has been provided by Cognition (a specialist remediation contractor who are the only contractor in the UK licensed to use the NET System).

4.5 **Total fluids abstraction (TFA)**

The costed scope is based on the following assumptions:

- 50 No. newly installed recovery wells of standard construction on Willoughby Lane and Meridian Way will be suitable site coverage to allow recovery of NAPL across the site.
- Groundwater treatment can be achieved to adequate standard using separation, infiltration and air stripping, without the need for activated carbon, to tender treated groundwater suitable for disposal to sewer and to groundwater.
- Abstracted groundwater can be pumped water from Meridian Way to a treatment plant based on Willoughby Lane through the subway beneath the railway.
- NAPL recovery will be completed within one year in some areas of the site, extending to two years in certain areas.

5. **Cost Certainty**

5.1 Cost estimates are presented Part 2 of this report for the NET System and for TFA respectively.

6. **Conclusion**

6.1 The NET System produces >99% NAPL (i.e. hydrocarbons) whereas Total Fluids Abstraction (TFA) produces a mix of oil and water (which can be as low as 1-2% NAPL). The latter then needs separating requiring additional equipment, which has both a cost implication and takes more space and time – furthermore, TFA is more intrusive and less effective as a solution than the NET System and thus

stands less chance of meeting programme demands or achieving regulatory approval when compared to the NET System.

Effectiveness - The NET system is expected to be more effective in recovering NAPL than TFA because:

- It will only recover NAPL, not a groundwater/ NAPL mix.
- It can be installed quickly and easily be moved to target key areas of the site.
- It is expected to recover greater volumes of NAPL in a given timeframe and the recovery is time-constrained considering the development programme.

6.2 TFA is likely to become increasingly inefficient as NAPL is recovered. This means that an increasing volume of water will need to be pumped for each litre of recovered NAPL over time.

6.3 **Convenience**

The standalone nature of each NET system means that soil remediation and, if necessary, development, can work around NAPL recovery. In contrast TFA requires pumping wells to be connected to a water treatment plant, so power cables/air lines and pipework would need to extend across large areas of the site – this would be a major constraint for the planned soils remediation and building development.

6.4 NAPL recovery by TFA on the Meridian Way site will either require a separate water treatment plant (which is not included in the costs) or would require power, control and pipework in the subway beneath the railway. The subway is known to be flooded, has not to our knowledge been accessed since 2011 and is currently un-usable, plus access is controlled by Network Rail.

6.5 In addition, a TFA scheme that abstracts significant volumes of groundwater is likely to require water infiltration trenches to reduce disposal to sewer.

6.6 Pipework and infiltration trenches associated with TFA are likely to disrupt soil remediation. These constraints are also likely to have an impact on the soils remediation contractors programme and would incur time related cost delays.

6.7 The NET System can, if necessary, continue to operate during and after development because it is unobtrusive. TFA would be much more intrusive and is less likely to be acceptable to a developer or to residents.

6.8 **Sustainability**

NET system uses very little power and generates very little waste. In contrast, TFA uses significantly more power and generates large volumes of waste water which must be treated before reinjection or disposal to sewer.

6.9 **Cost**

Based on the estimates above, the NET System is estimated to be approximately 18% less expensive over the two years of operation than TFA and further cost

savings may be achieved with the NET System solution. depending on effectiveness achieved. Extending remediation beyond the two years to target persistent areas will be less expensive using the NET system, as with the standalone units as this does not require maintenance of the water treatment plant.

6.10 **Overall**

The shallow groundwater remediation objectives are defined as 'to recover, as far as is reasonable in terms of site constraints, timetable for development, technical feasibility and cost-effectiveness, mobile (i.e. recoverable) NAPL from the Kempton Park Gravels'.

6.11 It is considered the NET System offers a number of advantages in meeting the objectives:

- Lower cost and more effective solution;
- Increased NAPL recovery potential, especially DNAPL;
- Reduced deployment lead in time;
- Increased flexibility working around site constraints; and
- Increased sustainability.

6.12 Amec Foster Wheeler has recommended application of the NET System to recover NAPL on the Willoughby Lane and Meridian Way sites. Use of the NET System has also been endorsed by the Environment Agency.

6.13 Cognition are the only contractor licenced to use the NET System in the UK, see Appendix 1 for confirmation.

7. ALTERNATIVE OPTIONS CONSIDERED

7.1 An alternative NAPL recovery system using TFA has been considered as detailed above. A case has been made for the adoption of the NET System by LBE's technical consultants.

8. REASONS FOR RECOMMENDATIONS

8.1 Recovery of NAPL from the KPG is a requirement of the EA approved remediation strategy for both the Willoughby Lane and Meridian Way sites. It needs to be completed prior to development of the sites so is a critical path item. Adoption of the NET system is recommended as the best technical option and comparatively is the lower cost solution.

8.2 The NET system is only operated in the UK under licence to Cognition.

9. COMMENTS OF THE DIRECTOR OF FINANCE, RESOURCES AND CUSTOMER SERVICES AND OTHER DEPARTMENTS

9.1 Financial Implications

9.1.1 The 2016-17 budget report approved by Council in February 2016 included the Meridian Water Capital Programme budget for the year 2016-17 inclusive of a

forecast budget for remediation and the costs referred to within this report can be contained from within this budget at no additional borrowing cost to the Council.

9.2 Legal Implications

9.2.1 Legal implications are contained in Part 2 of this report.

9.3 Procurement Implications

9.3.1 As referenced above, Cognition are the only providers who can realistically deliver this activity under the preferred method identified. As such, this procurement has been conducted as an exception to competitive tendering, under clause 9.1.10 of the Council's CPRs [included below for transparency].

9.3.2 "Where the goods, services or works are only available from a single supplier or are available only at a fixed price and no suitable alternative is available in accordance with EU procurement law."

9.4 Property Implications

9.4.1 Strategic Property Services (SPS) is aware that groundwater de-contamination and remediation works are potentially expensive and time consuming issues and have the capacity to adversely affect the development programme.

9.4.2 Whilst SPS do not possess the necessary expertise to make a professional judgement between the two remediation options, it is noted that regeneration officer colleagues have used Amec Foster Wheeler to produce an appropriation brief, specification and costings ahead of a decision and this approach is considered correct based on previous relevant experience.

9.4.3 It is noted that there is the potential for upscaling/prolonging works if the underlying assumptions prove incorrect and therefore further consideration could be given to an understanding of the risk and impact of non-performance of the system and the overall effect on the development programme.

9.4.4 It has been assumed by SPS that the comparative methodologies have been thoroughly compared in programme risk terms as well as cost and other factors.

10 KEY RISKS

10.1 The key risks can be considered as the following:
Whilst the EA have authorised the method they will still need to sign off the operation after it has been in operation. Not gaining EA signoff following 1 year's operation; -**Mitigation** provision has been made within the budget for a 2nd and if necessary 3rd year as a mitigation measure.

10.2 Development programme preventing completion of planned works due to access issues. **Mitigation** - the remedial approach is flexible and can operate in tight spaces and furthermore, so long as it can be demonstrated that 'best efforts' were made in the time opportunity available, then all stakeholders should be satisfied.

- 10.3 Presence of DNAPL (hydrocarbon contamination) under the rail lines in a natural depression in the geology making it difficult to extract. **Mitigation** - Additional mitigation measures w.r.t. piling design may be required if residual DNAPL contamination is left on-site; note that the planned deep piling approach already uses a method to mitigate vertical migration. This risk will be dealt with via the developer's Foundations Works Risk Assessments (as per the planning condition), which will outline these aspects.
- 10.4 Dust or vapour generation from the site – **Mitigation** – Boundary monitoring will be put in place and any corrective action will be taken as and when necessary.
- 10.5 The exclusivity agreement in the contract is until 31st December 2018 – **Mitigation** - In advance of this date, a review of the requirements for additional works (if any) will be undertaken and options for procurements (e.g. extension of proposed contract, further market testing) put forward for consideration

11 IMPACT ON COUNCIL PRIORITIES

- 11.1 The remediation of work at Meridian Water is a part of the Masterplan which is fundamental in achieving sustainable development. Planning and urban design guidance about the significant scale of change proposed throughout the document seeks to achieve fairness for all, sustainable growth and the development of strong communities.

12 EQUALITIES IMPACT IMPLICATIONS

- 12.1 A Predictive EQIA has been undertaken and has highlighted no negative impact on residents from the protected characteristic groups or persons due to socio-economic factors.

13 PERFORMANCE MANAGEMENT IMPLICATIONS

- 13.1 Delivery of a comprehensive regeneration scheme at Meridian Water is a corporate priority within the Council's Business Plan 2012-15. Completion of the Masterplan and delivering phased infrastructure improvements will help to meet Outcome 2.10 of the Business Plan; to improve the quality of life of residents through the regeneration of priority areas and promote growth and sustainability.

14 HEALTH AND SAFETY IMPLICATIONS

- 14.1 Cognition will act as Principal Contractor for the initial phase of the works (prior to commencement of the soils remediation, developer or Network Rail) and will therefore, be responsible for site Health and Safety. Amec Foster Wheeler carried out a review of their competence and compliance with H&S regulations, on behalf of Enfield Council. This found Cognition to be suitably qualified to undertake the role, with a proven track record in Health & Safety.
- 14.2 Cognition are experienced in dealing with the types of contamination anticipated on site and understand how to work with these materials safely.

15 HR IMPLICATIONS

N/A

16 PUBLIC HEALTH IMPLICATIONS

- 16.1 The remediation works are subject to planning permission which include satisfying conditions relating to environmental management and monitoring and verification reporting. Based on the planned operation and maintenance of the NET systems on site, it is unlikely to result in significant dust or vapour generation, therefore, the works will have limited implications with respect to public health for adjacent site users. Boundary monitoring will be undertaken with mitigation measures put in place as required. Site security will be in place to prevent unauthorized access.

17 Appendices

- 17.1 Appendix 1 – letter from EIC confirming Cognition
17.2 Appendix 2 – Justification of the NET System

18 Background Papers

None



Our Contribution to the Environment

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April 29, 2016

Mr. Jon Goddard
Cognition Land & Water
Springfield House
Oatlands Drive
Weybridge, Surrey KT13 9LZ
United Kingdom

Subject: Executed International Exclusive Representative Agreement

Hi Jon,

As chronicled in our previous communications, this letter reconfirms that Cognition Land & Water is our exclusive representative for sales, installation, and servicing of EIC's unique Non-aqueous Extraction Technique (NET) systems in the contiguous United Kingdom. This exclusive arrangement, following the terms of our International Exclusive Representative Agreement, is valid until December 31, 2017.

If you have any questions in this regard, please contact me.

Thanks.

Very truly yours,
ENVIRONMENTAL INTERNATIONAL CORPORATION

Alan Sanders, P.
Associate



Cc: Richard Hosking, Cognition
Raj Mahadevaiah, EIC



Technical note:

Justification of NAPL Remediation Approach Willoughby Lane and Meridian Way

1. Introduction

Amec Foster Wheeler has produced a Groundwater Remediation Options Appraisal (ref 34910 RR693i3) for Non Aqueous Phase Liquid (NAPL) recovery from shallow groundwater in the Kempton Park Gravels (KPG) beneath the Willoughby Lane and Meridian Way sites.

The options appraisal was produced in support of the Shallow Groundwater Remediation Strategy for Willoughby Lane and concluded that the NET system was the preferred technology.

The purpose of this technical note is to provide a summary cost and effectiveness comparison of the two most favourable remediation options.

2. Remediation options appraisal

2.1 Recommended technology

Based on the remedial objectives, the options appraisal concluded that the Non-aqueous Extraction Technique (NET) recovery scheme is the preferred remediation option for NAPL recovery on the Willoughby Lane and Meridian Way sites. This system has the advantages of:

- ▶ Effective recovery of both LNAPL and DNAPL;
- ▶ Ability to match the rate of recovery to the rate of NAPL inflow to a well, which is the maximum possible inflow rate;
- ▶ Low running costs;
- ▶ Portability;
- ▶ Limited disruption during soil remediation and development because it can operate on a standalone basis.

2.2 Benefits of the NET recovery scheme over total fluid abstraction

The next most favourable option was Total Fluid Abstraction (TFA), which involves pumping a mixture of water and free product, followed by surface treatment to separate NAPL from water and then treatment and disposal of water. TFA was undertaken at the Willoughby Lane Site between 2001 and 2006 and therefore its likely performance and the scale of operations required is well-understood.

The NET system has significant advantages over TFA. These are:

- ▶ Flexibility: NET system can be easily and quickly be moved about a site from well to well;



- ▶ Programme, field trials indicate that NAPL can be recovered relatively quickly using the NET system. In many areas of the site, NAPL recovery will be restricted to one year due to the pending development;
- ▶ Waste generation: the NET system only recovers free product, whereas TFA generates large quantities of contaminated waste water that require treatment and disposal;
- ▶ Reduced interference with other site activities. The NET system comprises standalone recovery units, which do not require pipes or cables. In contrast, TFA requires significant infrastructure in the form of a power supply and pipework to extract water and NAPL and to direct recovered water and oil to a central treatment works- this would be very disruptive during soils remediation and development;
- ▶ Sustainability: since the NET system does not recover groundwater, the system avoids the need for costly and energy intensive groundwater abstraction, treatment and reinjection;
- ▶ The NET system does not result in groundwater lowering therefore there are no potentially significant impacts on adjacent infrastructure that may be sensitive to dewatering settlement, including the railway and National Grid's PRS;
- ▶ The trial of NET at Willoughby Lane has demonstrated its ability to rapidly recover LNAPL and DNAPL and
- ▶ Permitting: NAPL recovery based on the NET system does not require abstraction or discharge consents.

2.3 Assessment criteria and scoring detail

The criteria used to evaluate potential remedial options for this site are set out as follows:

- ▶ *Practicability* – practical considerations for implementation and maintenance of the selected remedial strategy, including its long term durability (ranking system: 1 = least practicable, 5 = most practicable);
- ▶ *Effectiveness* – ability of the selected technique to meet the remedial objectives and the time taken for remedial objectives to be met (ranking system: 1 = least effective, 5 = most effective);
- ▶ *Cost* – a comparison of the relative costs of each remedial method (ranking system: 1 = highest cost, 5 = lowest cost); and
- ▶ *Sustainability* – consideration of additional environmental objectives such as consumption of power and water, generation of waste, air and noise pollution, vehicle movements and used of off-site locations such as landfills (ranking system: 1 = least sustainable, 5 = most sustainable).

Table 2.1 presents a matrix in which the two remedial options selected are ranked for each of the four assessment criteria listed above. Additional justification of the scoring is presented in the options appraisal (ref 34910 RR693i3).

Table 2.1 Assessment criteria and score

Technique	Assessment Criteria and Score (out of 5)						
	LNAPL		DNAPL		LNAPL+DNAPL		Total
	Practicability	Effectiveness	Practicability	Effectiveness	Cost	Sustainability	
Total fluids abstraction (TFA)	3	4	2	4	3	3	19
NET system without groundwater lowering	5	4	4	4	4	5	26



3. Cost comparison

3.1 System scoping

In order to compare costs of the two systems, Amec Foster Wheeler has estimated the size and scale of a remediation system, in terms of the numbers of recovery wells, number of recovery pumps, the duration of recovery and, in the case of TFA, the capacity of the water treatment plant required.

A number of assumptions have been made in deriving the scope and cost estimate of deploying this system at Willoughby Lane and Meridian Way. If any of the assumptions turn out to be incorrect, some aspects of the scheme may require amendment, upscaling or prolonging, which is likely to lead to an increase in costs.

3.2 NET system

The scope is based on the following assumptions:

- ▶ 10 No. NET units installed within a proposed 25 No newly drilled and installed recovery wells on Willoughby Lane and Meridian Way will be suitable site coverage to allow recovery of NAPL across the site.
- ▶ NAPL recovery will be completed within one year in some areas of the site, extending to two and possibly three years in certain areas.

Information on costs has been provided by EIC (NET system manufacturer) and Cognition (specialist groundwater remediation contractor who are the only contractors in the UK licensed to use the NET based NAPL recovery system on the sites).

Application of the NET system at the sites is anticipated to require the following:

- ▶ Resident technician, full time for year one, site accommodation, plus office / senior support.
- ▶ EIC design, training, site visits and office support.
- ▶ Mobilisation, moving units, demobilisation, NAPL testing, power supply, reporting.
- ▶ 10 No NET units, hydrophobic fabric belts, ancillary equipment and product storage; 5 for LNAPL recovery and 5 for DNAPL.
- ▶ Drilling an installation of up to 40 No. recovery wells, to depths of between 3 and 8 m, with part stainless steel, enhanced efficiency installations.
- ▶ Drilling an installation of up to 47 No. monitoring wells, to depths of between 3 and 8 m, with part stainless steel, enhanced efficiency installations.
- ▶ Waste NAPL storage and disposal in year one.
- ▶ Resident Engineer, weekly visits in year two.
- ▶ Equipment maintenance, supplies, power, moving units.
- ▶ Waste NAPL storage and disposal in year two.

The outline indicative costs of the above scope are listed in Table 4.1. The quotation received from Cognition dated 29 March 2016 is presented in Appendix A.

Total fluids abstraction

The scope is based on the following assumptions:

- ▶ 50 No. newly installed recovery wells of standard construction on Willoughby Lane and Meridian Way will be suitable site coverage to allow recovery of NAPL across the site.



- ▶ Groundwater treatment can be achieved to adequate standard using separation, infiltration and air stripping, without the need for activated carbon, to tender treated groundwater suitable for disposal to sewer and to groundwater.
- ▶ Abstracted groundwater can be pumped water from Meridian Way to a treatment plant based on Willoughby Lane through the subway beneath the railway.
- ▶ NAPL recovery will be completed within one year in some areas of the site, extending to two years in certain areas.

The scope of the scheme and costs are based on costs of the 2000 to 2006 remediation, which was carried out on the Willoughby Lane site. This work was competitively tendered by National Grid Property and therefore is assumed to provide a good reflection of market rates at the time. An allowance has been added to the 2000 estimate for a cyclone NAPL separation tank, as this amendment was required to the original system to separate the NAPL mixture encountered on site.

Cost have been increased by 62.5% due to inflation over the 16 years since 2000. The Average Weekly Earnings Index Construction has increased by 54.7% between 2000 and 2015. The Building Cost Information Services (BCIS) all in Tender Price Index (TPI) has increased by 70.3%. We therefore consider that an increase of an average of these two indices is reasonable. Details of these, and other, indices is presented in Appendix B.

It is noted that there is uncertainty regarding the scope of TFA that may be designed and implemented today and uncertainty regarding the inflationary increase since 2000, however without inviting designs and tenders from specialist contractors, the estimates of scope and cost are considered to provide a reasonable estimate.

Application of TFA is anticipated to require the following:

- ▶ Drilling and installation of 50 extraction wells up to 9m bgl;
- ▶ Installation and operation of approximately 50 submersible top/bottom loading pneumatic pumps and pipework infrastructure;
- ▶ Groundwater infiltration trenches to promote NAPL flow to recovery wells and aid recovery;
- ▶ On site water treatment plant, consisting of transfer tank(s), control container (compressor housing), oil water separator, filter media and air stripper.
- ▶ Resident engineer(s) for technical management, operation & maintenance and environmental monitoring, assuming intensive operation and management over 12 month, and 20% effort in year two;
- ▶ Product removal and off-site disposal and groundwater disposal to sewer;
- ▶ Railway settlement monitoring (due to risk of settlement as a result of groundwater abstraction);
- ▶ Dedicated electrical power supply; and
- ▶ Abstraction license and discharge consents for re-injection and / or disposal to sewer.

The outline indicative costs of the above scope are listed in Table 4.2.

4. Outline indicative costs

4.1 Cost estimates

Cost estimates are presented in Table 4.1 and 4.2 for the NET System and for TFA respectively.

As defined above, the NET system is based on a quotation from Cognition in March 2016, for up to two years of operation. This quote was intended to be at the upper range of likely out-turn costs to cover risk.



The TFA estimate is based on the 2000 tendered price, with an additional allowance for a larger oil water separation tank, increased by an inflationary factor. Further details are given in Appendices B and C.

It is noted above that before concluding the procurement process with Cognition or tendering TFA, there is some uncertainty regarding these estimates.

Exclusions

The cost estimates have excluded costs for the following items:

- ▶ Security, the groundwater remediation is assumed to coincide with soil remediation, therefore a separate cost has not been included for security, However it is possible security may be required on completion of soil remediation (note some allowance for security is included in the Cognition quote in Appendix A but has been accounted in Table 4.1);
- ▶ Conversion of the NET systems to entirely below ground systems in year 2 (included as an option in the Cognition quote in Appendix A but not accounted for in Table 4.1)
- ▶ Consultancy and other third party costs for management of remediation; and
- ▶ Costs associated with disruption to groundwater remediation due to soil remediation or from site development. It is considered that implementation of the standalone units of NET systems will be inherently more flexible and less interrupted by the soil remediation.

Table 4.1 NET system (two years) cost estimate

Task	Total
1 Resident engineers, full time for year one, site accommodation, plus office / senior support.	£ 89570
2 EIC design, training, site visits and office support.	£ 75684
3 Mobilisation, moving units, demobilisation, NAPL testing, power supply, reporting.	£ 60180
4 10 No NET units (9 new + 1 refurb), hydrophobic fabric belts, ancillary equipment and product storage; 5 for LNAPL recovery and 5 for DNAPL.	£ 236093
5 Drilling an installation of 40 No. recovery wells and 47 monitoring wells, to depths of up to 8 m, with part stainless steel casing	£ 116560
6 Waste NAPL storage and disposal in year one.	£ 21000
7 Resident Engineer, weekly visits in year two and head office support and reporting	£ 36310
8 Equipment maintenance, supplies, power, moving units, NAPL storage and	£ 37460
9 Cognition mark-up on subcontractor	£ 35197
10 Miscellaneous items	£ 15,611
	£ 723,665



Table 4.2 Total fluids abstraction (two years) cost estimate

	Task	Total
1	Contact and office support	£ 75,969
2	Design Cost	£ 28,038
3	Site Supervision	£ 28,038
4	Site Accommodation and Plant	£ 10,036
5	Well Installation	£ 48,737
6	Trenches and Pipe Laying	£ 49,628
7	Pumps and Distribution Network	£ 146,452
8	Groundwater Treatment Plant & cyclone NAPL separator	£ 157,898
9	Commissioning	£ 7,941
10	Demobilisation	£ 21,299
11	Operation and Maintenance Per Month – Year 1 (intensive)	£ 129,675
12	Operation and Maintenance Per Month – Year 2 (part-time)	£ 25,935
13	Disposal of water	£ 53,040
14	Service Connections and electrical power	£ 13,731
15	Groundwater Elevation Monitoring, Supply, installation and maintenance of 2 water level monitors.	£ 2,844
16	Monitoring of Railway Embankment	£ 42,599
17	Removal of Pipework	£ 15,519
	Total	£ 857,378

5. Conclusion

5.1 Effectiveness

The NET system is expected to be more effective in recovering NAPL than TFA because:

- ▶ It will only recovery NAPL, not a groundwater/ NAPL mix.
- ▶ It can be installed quickly and easily be moved to target key areas of the site.
- ▶ It is expected to recover greater volumes of product in a given timeframe and the recovery is time-constrained considering the development programme.

TFA is likely to become increasingly inefficient as NAPL is recovered. This means that an increasing volume of water will need to be pumped for each litre of recovered NAPL over time.

5.2 Convenience

The standalone nature of each NET system means that soil remediation and, if necessary, development, can work around NAPL recovery. In contrast TFA requires pumping wells to be connected to a water treatment plant, so power cables/air lines and pipework would need to extend across large areas of the site. NAPL



recovery by TFA on the Meridian Way site will either require a separate water treatment plant (which is not included in the costs above) or would require power, control and pipework in the subway beneath the railway. The subway is known to be flooded, has not to our knowledge been accessed since 2011 and is currently un-usable.

In addition, a scheme abstracting groundwater is likely to require water infiltration trenches to reduce disposal to sewer.

Pipework and infiltration trenches are likely to disrupt soil remediation. These constraints are also likely to have an impact on the soils remediation contractors programme and would incur time related cost delays.

The NET system can, if necessary, continue to operate during and after development because it is unobtrusive. TFA would be much more intrusive and is less likely to be acceptable to a developer or to residents.

5.3 Sustainability

NET system uses very little power and generates very little waste. In contrast TFA uses significantly more power and generates large volumes of waste water which must be treated before reinjection or disposal to sewer.

5.4 Cost

NET system has a comparable cost to TFA.

Based on the estimates above, the NET System is estimated to be approximately 18% less expensive over the two years of operation than TFA.

Extending remediation beyond the two years to target persistent areas will be less expensive using the NET system, as with the standalone units as this does not require maintenance of the water treatment plant.

5.5 Overall

The shallow groundwater remediation objectives is defined as *'to recover, as far as is reasonable in terms of site constraints, timetable for development, technical feasibility and cost-effectiveness, mobile (aka recoverable) NAPL from the Kempton Park Gravels'*.

It is considered the NET system offers a number of advantages in meeting the objectives:

- ▶ Lower cost effective solution;
- ▶ Increased NAPL recovery potential, especially DNAPL;
- ▶ Reduced deployment lead in time;
- ▶ Increased flexibility working around site constraints; and
- ▶ Increased sustainability.

For these reasons, we recommend application of the NET system to recover NAPL on the Willoughby Lane and Meridian Way sites.



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Management systems

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Annex A

NET system costs



NAPL REMEDIATION PROPOSAL
FOR
WILLOUGHBY LANE AND MERIDIAN WAY

Issue Number: 01

Project Number: CLW001459

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Remediation Engineer

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Appendix A	Approximate locations of recovery wells
Appendix B	CVs of proposed COGNITION team
Appendix C	Programme for Phase I
Appendix D	Bill of Quantities
Appendix E	Environmental International Corporation (EIC) Support Proposal
Appendix F	NET™ System Operation & Maintenance Manual

1. Introduction

Cognition Land and Water (COGNITION) has been contracted by Enfield Council to produce a proposal for the recovery of mobile NAPL (Non-Aqueous Phase Liquid) at the Willoughby Lane and Meridian Way sites in Edmonton, London. The Willoughby Lane site was formerly used as a town gas works and the Meridian Way site as a coal stacking area. The sites are to be redeveloped for housing, with areas of public open space and a new railway station. The first phase of construction is intended to be completed by 2018, with further phases to follow.

The ground conditions at the site have been described by Amec Foster Wheeler as Made Ground overlying Enfield Silt, over the Kempton Park Gravels (KPG), over the London Clay. Groundwater has been observed within the KPG, most commonly at 1-2.5 mbgl. Both LNAPL (Light Non-Aqueous Phase Liquid) and DNAPL (Dense Non-Aqueous Phase Liquid) have been identified within the KPG; LNAPL is floating on top of the water table and DNAPL has accumulated within lower lying areas of the impermeable London Clay.

The objective of the remediation works is to demonstrate a significant reduction in the amount of NAPL on the site. It is not intended to meet a numerical target or to reduce the NAPL to zero.

2. Scope of Works

COGNITION propose to install extraction wells and deploy NET™ (Non-aqueous Extraction Technique) Systems to recover LNAPL and DNAPL. Environmental International Corporation (EIC) has developed the NET™ system and put together a support proposal (Appendix E) that should be read in conjunction with this document. The works are envisaged to take one year full-time, but may continue for 2-3 years on a part-time basis in accordance with the site redevelopment.

2.1 Boreholes

COGNITION will contract LEAP Environmental to install four different types of boreholes:

- LNAPL extraction wells
- DNAPL extraction wells
- LNAPL monitoring wells
- DNAPL monitoring wells

Work will be carried out in general accordance with BS 10175:2011+A1:2013 (Investigation of potentially contaminated sites – Code of practice) and BS 5930:2015 (Code of practice for ground investigations). Leap Environmental will dispose of all arisings and will produce logs within 1 week and a factual report within 2 weeks of completion.

EIC has proposed locations for 10 wells for LNAPL recovery and 10 wells for DNAPL recovery (Appendix A). The locations were selected based on a review of site data provided by Amec Foster Wheeler, which included maps of LNAPL and DNAPL plumes, the top of the London Clay and groundwater levels. The number of wells may be increased to 20, depending on conditions encountered during additional site investigation.

The average depth of the wells will be 3m for LNAPL recovery (based on recorded groundwater levels) and 8m for DNAPL recovery (based on the elevation of the top of the London Clay). In areas where the top of the London Clay is reportedly higher (well numbers 2, 4 and 5), it is envisaged that DNAPL recovery wells will not

be as deep. The exact depths of the wells will be confirmed following additional site investigation and discussions with Amec Foster Wheeler.

LNAPL and DNAPL wells will be equipped with a sump below the well screen that is sealed with a bentonite seal. The well screens on LNAPL wells will straddle the water table, whereas the bottom of the screened intervals on the DNAPL wells should be set even or 0.1m below the London Clay.

The extraction wells will be formed of HDPE with a stainless steel well screen (as recommended by EIC). Stainless steel will permit greater flow of NAPL into the well, facilitating a greater rate and quantity of recovered product.

A maximum of 25 monitoring wells for LNAPL (3m) and 22 monitoring wells for DNAPL (8m) will also be installed across the site. These wells will be monitored for NAPL rebound during the operation of the NET System. These wells will be formed of HDPE and have a minimum 100mm diameter well casing. Since the site has been subjected to numerous investigations, it may be possible to use existing wells for monitoring.

2.2 NET Systems

The NET™ System has been designed and manufactured by EIC in Georgia, USA. It is a highly efficient, practical and cost-effective approach for the remediation of NAPL, with reported recovery efficiencies of 99%. The system uses two motorised squeeze rollers and a continuous loop of NET™ fabric. The fabric consists of thousands of oleophilic/hydrophobic fibres bound into a flat strip by a central Kevlar® fibre reinforced fabric core. The squeeze rollers drive the fabric (which is held taught by a weighted tail pulley) in a loop down into the recovery well, through the NAPL and back out of the well where the squeeze rollers desorb the NAPL from the fabric, allowing it to gravity drain into an appropriate container (e.g. an Intermediate Bulk Container). The fabric to be utilised by COGNITION will be 51mm (2 inches) wide, since EIC considers this to be the ideal for a 100mm (4 inch) recovery well. The weighted tail pulley will be installed 1-1.5m below the water level for LNAPL recovery or installed near the bottom of the well for DNAPL recovery.

The NET™ System has a number of notable advantages over conventional NAPL remedial technologies. For example:

- it is capable of continuously recovering LNAPL or DNAPL, without recovering water, thereby enabling the recovered product to be recycled/sold;
- groundwater pumping is not required, eliminating the costs associated with pumping, treating and disposing of water;
- it has low electric power consumption requirements;
- it is constructed of stainless steel, so it is rugged for outdoor use, is low maintenance and is dependable;
- the rate of recovery can be adjusted to match the recharge rate to maintain current recovery.

It is envisaged that 9 Stationary Above-Grade (above ground) NET Systems will be purchased from EIC and 1 existing system will be upgraded from a Portable Field NET System to a Stationary Above-Grade NET System.

However, the number of systems to be purchased may be reviewed at a later date following discussions with Amec Foster Wheeler and Enfield Council. Up to 5 of the Above-Grade NET Systems may need to be upgraded to Below-Grade Systems at a later date due to the site redevelopment programme.

2.2.1 NET System Installation and Operation

EIC will provide basic training to COGNITION on the installation, operation and maintenance of the systems. EIC will also provide an equipment operation manual (included as Appendix F). This manual includes a troubleshooting section, but 100 hours of remote technical support will also be provided by EIC.

The NET System is operated through a customisable control panel which includes:

- a variable speed drive – to optimise the NAPL recovery rate;
- an overflow shutoff switch – automatically shuts down the unit when the recovered NPL container reaches the maximum storage capacity;
- a programmable timer – allows the system to operate intermittently as needed.

Each unit will be operated independently by battery power; this negates the need for traditional hard-wired line power that typically presents obstacles to site redevelopment activities. A generator will be present on site and used to charge batteries overnight.

Prior to the site visit by EIC to install the NET Systems, COGNITION will have conducted a full round of testing of all site-wide wells with an oil/water interface metre, in order to select wells for installation. EIC will assist COGNITION in the installation of all 10 NET Systems and will then conduct 24-hour NAPL recovery potential tests at each well to determine if the NAPL recovery potential is sustainable. They will then determine an optimum recovery rate and equipment speed setting. If NAPL recovery is not sustainable, EIC will provide instructions to COGNITION to relocate the system.

NAPL recovery can be monitored by observing the amount dripping of the squeeze rollers or by periodically measuring the volume of NAPL and water recovered in the NAPL collection vessel. The following table determines the actions to be undertaken following recovery rate testing in each well:

Recovery Rate	Action
> 10 litres per day	Continue with active NAPL mass recovery using the NET System.
10 – 5 litres per day	Use the variable speed drive to adjust the recovery rate, switch to intermittent timer-based NAPL recovery or use passive processes such as periodic hand-bailing events.
< 5 litres per day	Relocate the NET System to another well.

The NET Systems will be supervised on a daily basis by **COGNITION**, who will make periodic checks. This will include:

- determining the correct fabric speed and whether recovery should be continuous or intermittent;
- checking that the NET fabric has not become tangled;
- checking the condition of the NET fabric and squeeze rollers for wear or damage;
- checking power supply connections and condition of electrical components;
- checking for leaks or spills of NAPL from any part of the system;
- monitoring of air temperatures, since frost will wear out motors.

If NAPL recovery rates reduce to 10 litres per day (lpd) or less, the variable speed drive can be used to adjust the speed of the belt; this ensures that the recovery rate matches the well recharge rate. The speed of the belt will progressively decrease as the NAPL reservoir becomes depleted. Periodic checks may indicate that the unit does not need to be in continuous operation, so a timer can be set to operate the system periodically. Manual well bailing will also be employed to supplement the NET system in low-yielding wells. When recovery rates reduce to less than 5 lpd and the plume has become stable and immobile, NAPL recovery will be considered technically impracticable and will cease. Groundwater will then be monitored for one seasonal cycle or longer until the NAPL recovery rates are confirmed to be less than 5 lpd and the NAPL plume is stable.

When the NET System is moved to another well, a new NET fabric will be utilised to avoid cross-contamination. Alternatively, the fabric may be cleaned in accordance with the procedures outlined in the Operation & Maintenance Manual.

Recovered NAPL will be collected in IBCs (Intermediate Bulk Containers) which will be located in a bunded area on an impermeable membrane, with spill kits and absorbents available. Once IBCs are three quarters full, they will be moved by a telehandler to a designated storage area to undergo off-site disposal/recycling.

COGNITION will liaise with the soils remediation contractor and aim to commence NAPL recovery in the areas that they intend to excavate first.

2.3 Mobilisation, Health & Safety and Security

Upon receiving an order, **COGNITION** will commission EIC to finalise the design and specification of the wells. LEAP Environmental will also be contracted for installation of the boreholes.

A site office, lockable store and welfare facilities (e.g. toilet, canteen, drying room etc) will be set-up on site. Heras fencing will be erected around the perimeter of the site and around each NET System. The maximum footprint required to install and operate each unit is considered to be approximately 2m². Signage will be erected around the site, detailing the levels of PPE required, the dangers within the compound and staff contact details. A traffic management plan will be produced for the site and updated regularly to ensure traffic congestion is avoided and traffic and pedestrian routes are safely segregated. Dedicated vehicle manoeuvring and delivery areas will be set up at the front of the site near to the entrance. This will allow vehicles to pull into the loading area and exit through a wheel wash facility if necessary.

All staff and visitors will be required to sign into the site and undertake a site specific induction, covering all aspects of working and visiting a contaminated site. All site operatives are required to hold a CSCS Operative card and Site supervisors will hold SMSTS qualifications. Drivers will hold the appropriate CPC cards and plant certificates will be obtained for all plant. COGNITION's Health and Safety advisor will visit the site fortnightly to carry out site safety inspections and audits; records of visits will be provided.

COGNITION will be the Principal Contractor until the soils remediation contractor mobilises to site (approximately 1-3 months later). COGNITION will therefore produce a Construction Phase Health and Safety Plan, to accompany the Risk Assessment and Method Statement. COGNITION will also provide 24-hour site security if instructed by Enfield Council.

Following the site-set up and installation of the boreholes, the 10 NET Systems (and associated parts and equipment) will be shipped from the USA to UK, followed by a site visit by two EIC technicians. The technicians will assist COGNITION in unpacking and setting up the systems. If NAPL recovery continues into years 2 and 3, EIC will ship 5 below-grade explosion-proof conversion kits to the UK. An EIC technician will re-visit the site to convert 1 above-grade NET systems into a below-grade system. COGNITION will be provided with training for the conversion of a further 4 below-grade systems.

2.4 Monitoring and Reporting

Following installation of all 10 NET Systems, EIC will prepare a report documenting the installation of the systems for long-term operation. The report will also include a site plan, identifying the locations of the NET Systems. After completion of their second site visit, EIC will prepare another report to document the conversion of above-grade units to below-grade systems at selected well locations.

During the NAPL recovery works, the site chemist will maintain a site diary. The personnel present, plant and equipment used, deliveries and collections, general observations/progress and details of any sampling undertaken will be reported on a daily basis.

NAPL recovery rates and thicknesses will be reported on a weekly basis. Monthly progress reports will also be provided, with more detailed interpretative reports (with recommendations) provided after 6 months and 12 months.

COGNITION will periodically conduct a spatial and temporal evaluation of the NAPL plumes to determine whether the:

- plume is stable or shrinking
- contaminant flux is meeting remedial goals and is sustainable
- prevailing remedy is practical and cost-effective
- projected time frame to reach remedial objectives is acceptable
- LNAPL end points are truly reflective of the remedial success or are an artefact of water level fluctuations
- individual wells indicate that remedial end points were reached or whether they are collectively reflective of the true reduction in NAPL remedial end points.

Upon completion of the NAPL recovery works, a final completion report will be written and issued to Enfield Council, the Environment Agency and Amec Foster Wheeler.

3. Project Team

The COGNITION project team will comprise:

- A project director – 150 hours during the first year to visit the site, attend project meetings, maintain overall control of the direction of the project works and make strategic decisions where necessary. The number of hours will decrease to 52 hours during year 2 and 24 hours during year 3.
- A site chemist – full time attendance in the first year and part time (weekly) attendance in years 2 and 3. This role is to manage the works, liaise with the EIC, the soil remediation contractor, Amec Foster Wheeler (the consultant) and Enfield Council (the client) and to ensure that the equipment is in good working order and running at the correct speed.
- Office support – 3 hours of office support work per week will be required, which involves dealing with suppliers, subcontractors, permits, licences and interim reporting.

The CVs of the proposed COGNITION team are provided in Appendix B.

4. Programme

An initial programme for Phase 1 of the works is attached in Appendix C. The programme covers design and regulatory approvals, ordering and purchasing of NET™ units, drilling and installation of wells and installation of NET™ system. The intention is to commence with the LNAPL treatment as this may be disturbed during drilling and wells are shallow (and therefore less expensive to install). The DNAPL treatment will require more careful delineation as the more expensive stainless steel wells need to be installed in locations to optimise recovery.

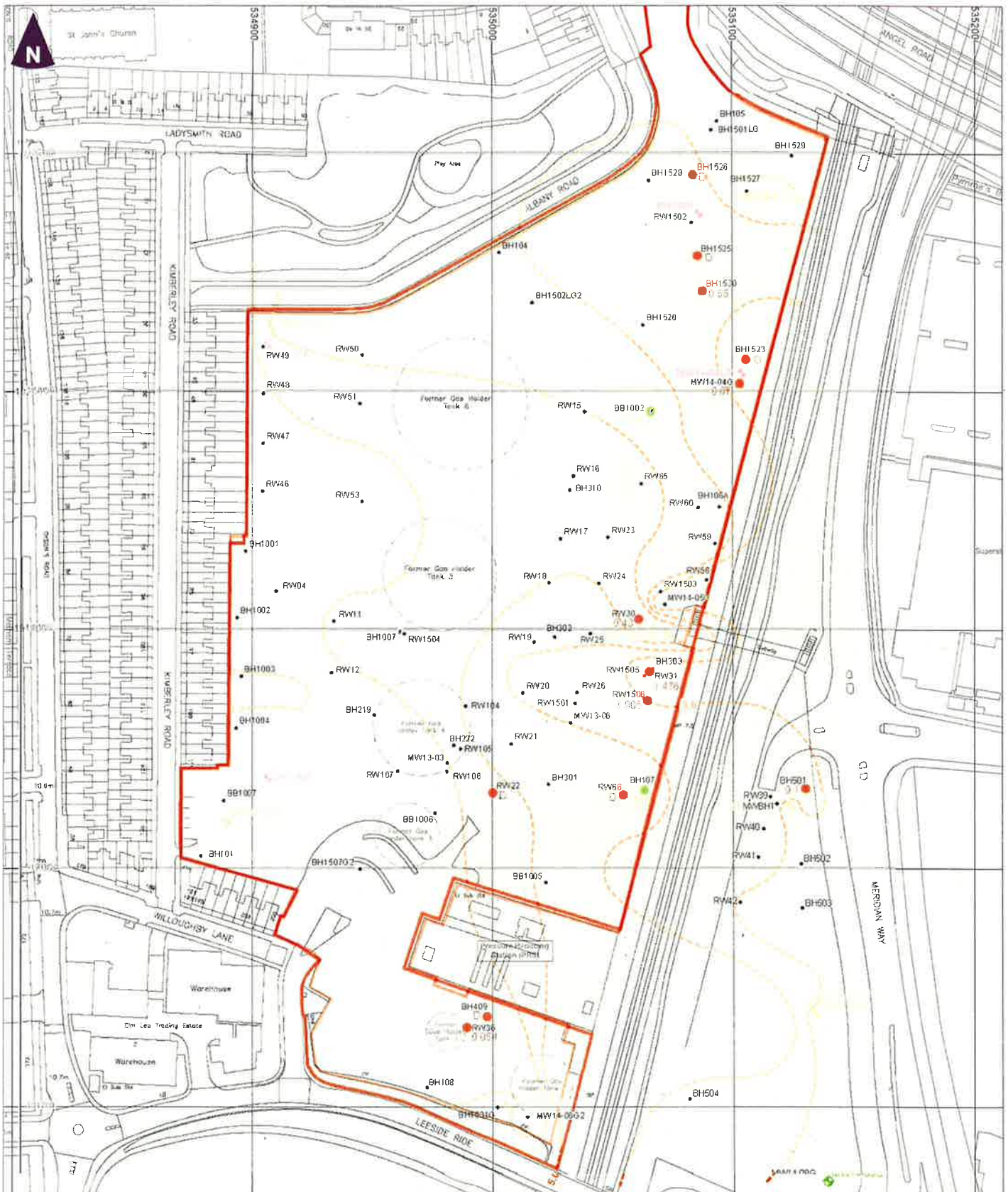
5. Commercial

COGNITION has provided the EIC costs and included 10% to cover P&O. COGNITION will take ownership of the NET™ units after a period of 3 years or completion of the project, whichever is sooner. The costs are attached in Appendix D and reflect the minimum overall costs of the project. The only contingency included in the costing is for additional monitoring and extraction wells where COGNITION has allowed for the installation of up to 20 no. wells; no contingency has been added for unforeseen site conditions or circumstances.

Appendices

APPENDIX A Approximate locations of recovery wells

Figure 3-2: Proposed Locations of DNAPL Recovery Wells



Key	Notes
	Site boundary
	Existing borehole in Chalk
	Existing borehole in Lambeth Group
	Existing borehole in Thanet Sands
	Estimated elevation of the top of London Clay
	DNAPL Plume Extents

- Topographical information supplied by the client and is dated March 2001.
- Gasholder tanks Nos. 5 & 6 demolished post survey in 2014 and ground levels in holder compound reduced.

Approximate locations of proposed DNAPL recovery wells - to be verified after acquiring and evaluating additional site data and proposed development activities

0 m 75 m
Scale 1:1500 @ A3

Enfield Council
Willoughby Lane
Shallow Groundwater
Remediation Options
Appraisal

Figure 3.4
Top of London Clay

December 2015 34910-Lcn335.dwg barkr

Based upon the Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office. © Crown Copyright 1000019820

APPENDIX B CVs of proposed COGNITION team



Richard Hosking

Title:

Director

Role:

Project Director

Years' Experience:

20

Qualifications & Training:

ONC HNC (Civil Engineering), City Guild – WAMITAB, CSCS

Summary of Expertise and Experience:

Richard has more than 20 years' experience working on major civil engineering projects with over 14 years' experience in remediation contracting. As COGNITION's remediation director, Richard has played a key role in reviewing client and consultant reports as well as developing, pricing and programming remediation strategies. As a director of a specialist contractor, Richard's overriding objective is to ensure the sustainability and cost effectiveness of proposed solutions taking into account the most recent changes in legislation. He is also responsible for ensuring that COGNITION employ the latest technology and maintain a strong and experienced network of independent experts and specialist subcontractors. Richard maintains a close working relationship with clients and has often advised developers on strategic planning matters relating to remediating and redeveloping brownfield sites.

Richard is responsible for the development of the company, ensuring the staff are well trained and the company meets its health, safety and environmental policies.

With many years working as a civil engineer for Amec Foster Wheeler and BAM Nuttall, Richard has a great deal of experience in delivering complex projects and running busy sites. He has an aptitude for ensuring site operations are optimised; maximising output while minimising costs.

Hunterston: Richard was able to use both his civil engineering and remediation experience to demonstrate that conventional techniques such as slurry walls and soil stabilisation were applicable to the maintenance programme for nuclear sites.

Stetley Chemicals: Richard was involved in the project at an early stage with the clients and their consultants, advising and helping to develop a phased remediation strategy. Richard emphasised the need to treat and segregate materials, stabilise soils and re-use tar in foamed asphalt for road construction; a strategy which saved the client significant costs. Richard was responsible for the overall delivery of COGNITION's works.

Millennium Dome: Richard was responsible for the delivery of the civils and remediation works carried out during the redevelopment of the former gasworks located on the Greenwich Peninsular.



Mark Hosking

Title:

Site Chemist

Role:

Site Chemist

Years' Experience:

3

Qualifications & Training:

CSCS, SMSTS, First Aid,
Asbestos Awareness

Summary of Expertise and Experience:

Whilst employed at COGNITION, Mark has gained experience of a number of remediation techniques, including bioremediation, groundwater treatment, chemical oxidation and soil stabilisation. Mark has the competencies required to run a site safely and efficiently, manage and organise personnel and complete projects on-time. Mark's main responsibilities include liaising with subcontractors, consultants and clients, managing site works and ensuring equipment is in safe working order.

Embassy Gardens: Mark was responsible for managing demolition and remediation works at Embassy Gardens in Battersea. Mark also produced a Materials Management Plan, conforming to the CL:AIRE code of practice, to enable the re-use of materials on-site and minimise off-site waste disposal.

Station Road, Cuffley: Mark supervised demolition of the former petrol station, removal of underground storage tanks, excavation of a contamination hotspot, groundwater treatment and installation of a pile mat.

Kingston Gasworks: Mark's role involved overseeing groundwater treatment during dewatering operations at Kingston Gasworks.

Balham: As a Site Chemist, Mark delineated areas of contamination, supervised piling works and completed final validation sampling and reporting.



Hendrik van der Spuy

Title:

Contracts Manager

Role:

Office Support

Years' Experience:

14

Qualifications &

Training:

BSc, CSCS

Summary of Expertise and Experience:

Hendrik has 14 years of experience working in the construction industry. Since joining **COGNITION** as a Contracts Manager, he has become familiar with remediation techniques such as soil stabilisation, chemical oxidation and groundwater treatment.

Whilst working for **COGNITION**, Hendrik has been involved in the following projects:

- Wimbledon Hill Park, London
- Enderby Wharf, Greenwich
- Royal Wharf, London
- Kingston Gasworks, Kingston
- National Film and Television School, Beaconsfield
- Brocklebank Retail Park, Charlton
- Cannon Wharf, Lewisham
- London Lane, Hackney

Hendrik's main responsibilities include liaising and negotiating with suppliers, subcontractors, site managers and clients. He ensures that site works are carried out in accordance with the agreed Method Statement and are completed on-time and within budget.



Claire Nichols

Title:

Remediation Engineer

Role:

Office Support

Years' Experience:

1

Qualifications & Training:

BSc, MSc, CSCS

Summary of Expertise and Experience:

Since joining COGNITION as a Remediation Engineer, Claire has produced a number of technical documents and reports, such as:

- Method Statements
- Risk Assessments
- Remediation Implementation Plans
- Materials Management Plans
- Environmental Monitoring Plans
- Verification Plans
- Verification Reports

Claire has also been responsible for liaising with laboratories to arrange sample analysis and with regulatory bodies to agree mobile plant permit deployments and groundwater discharge consent permits.

Claire has assisted at the design stage of a number of remediation projects, including the former Southall Gasworks site. She reviewed site investigation reports, completed a remediation options appraisal and produced a document to describe a number of proposed remediation pilot trials to be undertaken at the site.

APPENDIX C Programme for Phase I

APPENDIX D Bill of Quantities



Item	Description	Qty	UoM	Rate	Total	Notes
	<u>Year One</u>					
	PRELIMINARIES					
1.00	Allow management, on site Chemist	12	months	£3,900.00	£46,800.00	
1.00b	Allow management, Directors	150	hrs	£95.00	£14,250.00	
1.01	Extra over for P.C. at first	1	sum	Lump sum	£1,200.00	
1.02	Approval of works, pre start	1	sum	Lump Sum	£4,500.00	
	Site security, week end days only	50	weeks	£288.00	£14,400.00	
	Site security, Make and place steel container over units	10	nr	£2,600.00	£26,000.00	
	Site security, Move above 20 times	20	visit	£750.00	£15,000.00	Hiab and banksman
1.03	CLW office support	150	hours	£60.00	£9,000.00	
1.04	EIC design work	1	sum	£20,096.00	£20,096.00	
1.04b	EIC personnel support - above grade (ground) NET system	1	sum	£57,463.00	£57,463.00	see EIC Exhibit 8-1 Cost Table. \$1=£0.7
1.05	Profit and overhead on EIC Items				£7,755.90	
1.06	Completion final report	80	hours	£77.00	£6,160.00	
	Site Accomodation					
1.07	Temporary accomodation	50	weeks	£286.00	£14,300.00	
	Site Set up & testing					
2.01	Mobilisation	1	sum	Lump sum	£4,260.00	
2.02	Demobilisation	1	sum	Lump sum	£4,260.00	
2.03	Validation testing water	80	nr	By AMEC		
2.04	Disposal testing water	8	nr	£165.00	£1,320.00	
2.05	Monitoring and reporting	50	weeks	£240.00	£12,000.00	4 hours per week
	EIC NET System					
3.01	Complete NET units (9 new + 1 reconditioned) above grade	1	sum	£178,692	£178,692.00	
3.02	51mm Wide Oleophilic/Hydrophobic NET Fabric	680	m	£57.40	£39,032.00	see EIC Exhibit 8-1 Cost Table. \$1=£0.7
3.03	Stainless steel 3m wells	40	nr	£1,000.00	£40,000.00	
3.04	Maintain units i.e. motors (spare)	1	sum	£16,313.00	£16,313.00	see EIC Exhibit 8-1 Cost Table. \$1=£0.7
	Page 1 of 4				£532,801.90	



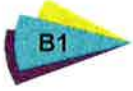
Item	Description	Qty	UoM	Rate	Total	Notes
	<u>Year one</u>					
3.05	EIC Stapler to staple fabric	2	nr	£167.00	£334.00	see EIC Exhibit 8-1 Cost Table. \$1=£0.7
3.05b	Profit and overhead on EIC Items				£27,437.10	
	Site works. Willoughby Lane					
4.01	Install 8m 100mm dia. Wells	20	nr	£1,115.00	£22,300.00	
4.02	Install 3m 100mm dia. Wells	20	nr	£410.00	£8,200.00	
4.03	Install monitoring wells 8m.	20	nr	£1,115.00	£22,300.00	
4.04	Install monitoring wells 3m	20	nr	£410.00	£8,200.00	
4.05	Power for NET units	50	weeks	£484.00	£24,200.00	
4.06	Moving NET units around wells	20	visits	£550.00	£11,000.00	
4.07	Take IBC and store oil	60	nr	£200.00	£12,000.00	
4.08	Disposal of oil	60,000	llts	£0.10	£6,000.00	
	Site works. Meridian Way site works					
5.01	51mm Wide Oleophilic/Hydrophobic NET Fabric	30	m	£57.40	£1,722.00	
5.02	Stainless steel 3m wells	7	nr	£1,000.00	£7,000.00	
5.03	Profit and overhead on EIC Items				£872.20	
5.04	Install 3m 100mm dia. Wells	5	nr	£410.00	£2,050.00	
5.05	Install monitoring wells 3m	5	nr	£410.00	£2,050.00	
5.06	Install 8m 100mm dia. Wells	2	nr	£1,115.00	£2,230.00	
5.07	Install monitoring wells 8m.	2	nr	£1,115.00	£2,230.00	
5.08	Moving NET units around wells	10	visits	£550.00	£5,500.00	
5.09	Take IBC and store oil	10	nr	£200.00	£2,000.00	
5.10	Disposal of oil	10,000	llts	£0.10	£1,000.00	
	Page 2 of 4				£168,625.30	



Item	Description	Qty	UoM	Rate	Total	Notes
	<u>Year Two</u>					
	<u>PRELIMINARIES</u>					
p.s.01	Allow management, on site Chemist visiting weekly	50	weekly	£325.00	£16,250.00	
p.s.02	Allow management, Directors	52	hours	£95.00	£4,940.00	
p.s.03	Site security, week end days only	50	weeks	£288.00	£14,400.00	
	Site security, Move above 20 times	12	visit	£750.00	£9,000.00	Hiab and banksman
p.s.04	CLW office support	52	hours	£60.00	£3,120.00	
p.s.05	EIC Site visits (4 business days+mob)					Not included
p.s.07	Disposal testing water	4	nr	£165.00	£660.00	
p.s.08	Monitoring and reporting	50	weeks	£240.00	£12,000.00	4 hours per week
p.s.09	51mm Wide Oleophilic/Hydrophobic NET Fabric					
	Replacements. Say 4 wells yearly	52	m	£57.40	£2,984.80	
p.s.10	Maintain units i.e. motors (spare)	1	nr	£884.80	£884.80	
	Below grade (ground) NET conversion kits and shipping	1	sum	£33,334.00	£33,334.00	
	EIC personnel support - above grade (ground) NET system	1	sum	£37,689.00	£37,689.00	see EIC Exhibit 8-1 Cost Table. \$1=£0.7
p.s.11	Profit and overhead on EIC Items				£7,489.26	
p.s.12	Power for NET units	50	weeks	£484.00	£24,200.00	
p.s.13	Moving NET units around wells	12	visits	£550.00	£6,600.00	
p.s.14	Take IBC and store oil	20	nr	£200.00	£4,000.00	
p.s.15	Disposal of oil	20,000	llts	£0.10	£2,000.00	
	Civil - excavation, manhole construction, back fill (not including making good on completion)	20	nr	£1,800.00	£36,000.00	
	Page 3 of 4				£215,551.86	



Item	Description	Qty	UoM	Rate	Total	Notes
	<u>Year Three</u>					
	<u>PRELIMINARIES</u>					
p.s.01	Allow management, on site Chemist visiting 4 weekly	12	weekly	£325.00	£3,900.00	
p.s.02	Allow management, Directors	24	hrs	£95.00	£2,280.00	
p.s.03	Site security, week end days only	50	weeks	£288.00	£14,400.00	
	Site security, Move above 20 times	12	visit	£750.00	£9,000.00	Hiab and banksman
p.s.04	CLW office support	24	hours	£60.00	£1,440.00	
p.s.05	EIC Site visits (4 business days+mob)	1	sum	£11,538.46	£11,538.46	
p.s.06	EIC Office support	20	hours	£150.00	£3,000.00	
p.s.07	Disposal testing water	4	nr	£165.00	£660.00	
p.s.08	Monitoring and reporting	40	hours	£60.00	£2,400.00	
p.s.09	51mm Wide Oleophilic/Hydrophobic NET Fabric Replacements. Say 4 wells yearly	56	m	£60.00	£3,360.00	
p.s.10	Maintain units i.e. motors (spare)	2	nr	£450.00	£900.00	
p.s.11	Profit and overhead on EIC Items					
p.s.12	Power for NET units	50	weeks	£483.00	£24,150.00	
p.s.13	Moving NET units around wells	12	visits	£550.00	£6,600.00	
p.s.14	Take IBC and store oil	20	nr	£200.00	£4,000.00	
p.s.15	Disposal of oil	20,000	lits	£0.10	£2,000.00	
	Total page 4 of 4				£89,628.46	
	Total page 3 of 4				£215,551.86	
	Total page 2 of 4				£168,625.30	
	Total page 1 of 4				£532,801.90	
	Total for three years				£1,006,607.52	
	Note: Retention 5% with 2.5% on final report and full release on Remediation sign off EA/LA.					
	EIC costs in blue					
	Page 4 of 4					

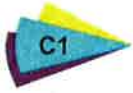


Annex B

Comparison of inflationary indices

COMPARISON OF INDICES

		08 November 2015		13 October 2015		13 October 2015		13 October 2015		14 June 2015		25 November 2015		30 October 2015		18 October 2015		18 October 2015		18 October 2015		14 June 2015	
	Q	RPI	RPI p.p.	RPIa (Excluding mortgages) p.p.	RPIa (Excluding mortgages) p.p.	CPI	CPI p.p.	Average Weekly Earnings Index Construction Weekly p.p.	Weekly p.p.	BIS PUBBCC TPI Non Housing	PUBSEC p.p.	BCIS All-in TPI	BCIS All-in TPI year on year	BCIS All-in OPI	BCIS All-in TPI year on year	BCIS General Building Cost Index	BCIS General Building Cost Index	BCIS Steel Framed Construction Cost	year on year	BCIS M & E Cost Index	year on year	Euro	
2000	1	187.5	2.3%	175	2.3%	92	0.0%	97.9		114	7.5%	128	7.5%	153	3.4%	185	3.9%	188	2.8%	184	2.5%		
2001	1	171.9	-2.6%	178	-1.7%	83	1.1%	202.9	1.8%	129	-10.5%	150	7.8%	159	8.1%	181	3.2%	189	3.8%	202	4.1%		
2002	1	172.9	0.6%	182	5.2%	86	2.3%	195.9	4.8%	134	3.9%	149	7.1%	179	9.8%	197	3.3%	187	2.1%	206	7.0%		
2003	1	179.2	3.6%	188	3.2%	98	1.1%	174.2	8.2%	149	7.5%	168	7.7%	184	3.8%	210	6.5%	209	6.1%	214	3.9%		
2004	1	183.5	2.4%	192	2.1%	97	1.0%	173.8	4.4%	150	4.2%	180	7.0%	188	9.7%	212	4.3%	217	3.8%	221	3.1%		
2005	1	189.7	3.2%	199	7.1%	99	2.1%	173.8	5.3%	153	8.7%	221	-10.1%	213	7.5%	238	7.5%	238	8.5%	247	7.2%		
2006	1	194.2	2.4%	202	2.0%	101	2.0%	173.4	5.1%	155	1.2%	228	3.2%	215	8.3%	249	5.1%	246	4.7%	248	3.8%		
2007	1	203.9	5.1%	208	4.9%	104	3.0%	172.4	7.7%	179	8.5%	238	1.8%	223	-0.9%	262	5.2%	261	6.1%	265	5.7%		
2008	1	211.1	4.0%	215	3.4%	106	1.8%	178.5	4.6%	182	7.8%	249	4.7%	247	0.6%	274	6.6%	271	3.3%	269	3.5%		
2009	1	210.9	-0.1%	220	2.3%	109	2.8%	143.5	8.4%	176	-8.8%	225	-8.8%	257	8.2%	285	6.0%	283	4.4%	278	3.7%	0.809	
2010	1	206.1	-2.4%	225	4.5%	115	5.1%	145.7	1.5%	183	-8.0%	209	-8.5%	235	-15.1%	289	1.4%	288	1.1%	284	3.4%	0.818	-2.35%
2011	1	203.9	-1.1%	243	3.7%	118	4.4%	148.5	0.3%	174	6.7%	219	4.8%	225	-2.2%	303	4.1%	301	5.2%	304	5.6%	0.824	-3.73%
2012	1	208.5	2.3%	252	3.7%	122	3.4%	148.5	0.3%	178	2.2%	213	-3.8%	231	2.4%	310	2.3%	309	2.7%	304	5.0%	0.824	-2.21%
2013	1	217.4	4.3%	260	3.2%	125	2.5%	143.8	-1.3%	169	-5.0%	204	8.6%	229	-1.7%	314	1.3%	311	1.0%	307	1.0%	0.814	-2.04%
2014	1	223.9	3.0%	267	2.7%	127	1.6%	146.5	2.1%	203	7.4%	247	3.9%	247	8.8%	318	0.8%	313	0.8%	308	0.3%	0.829	-2.70%
2015	1	226.4	1.1%	273	1.1%	127	0.0%	150.8	1.9%	204	1.0%	246	7.7%	225	-11.7%	319	0.6%	314	0.3%	310	-0.6%	0.843	-19.41%
2015	2	228.2	0.8%	272	-0.4%	128	0.8%	151.3	0.4%	207	1.0%	249	1.1%	229	-9.4%	319	0.0%	315	-0.8%	310	-0.7%	0.821	-11.41%
2015	3	228.1	0.0%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
2015	4	228.1	0.0%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
2016	1	231.4	1.5%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
2017	1	231.4	0.0%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
2018	1	231.4	0.0%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
2019	1	231.4	0.0%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
2020	1	231.4	0.0%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
2020	2	231.4	0.0%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
2020	3	231.4	0.0%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
2020	4	231.4	0.0%	273	0.4%	128	0.0%	151.3	-0.0%	207	0.0%	249	0.0%	249	0.0%	321	0.6%	316	-0.3%	310	-0.6%	0.821	-11.41%
Average 2000-current			2.80%		2.81%		2.11%		2.83%		4.95%		3.92%		4.13%		3.74%		3.69%		3.21%		
1Q00-1Q15			54.3%		55.4%		39.1%		54.7%		83.3%		70.3%		82.4%		72.4%		69.4%		59.8%		-17.0%



Annex C

TFA costs

Task	2001 B+B estimate			Cost	Cost
	#	Rate	Cost		
1 Contract and Office Support	1	46,750	46,750	48,750	75,969
2 Design Cost	1	17,254	17,254	17,254	28,038
3 Site Supervision	1	17,254	17,254	17,254	28,038
4 Site Accommodation and Plant	1	6,176	6,176	6,176	10,036
5 Well Installation	1	29,992	29,992	29,992	48,737
6 Trenches and Pipe Laying	1	30,540	30,540	30,540	49,628
7 Pumps and Distribution Network	1	90,124	90,124	90,124	146,452
8a Groundwater Treatment Plant	1	87,168	87,168	87,168	141,648
8b Additional sum for cyclone NAPL separator (estimated)	1	10,000	10,000	10,000	16,250
9 Commissioning	1	4,887	4,887	4,887	7,941
10 Demobilisation	1	13,107	13,107	13,107	21,299
11 Operation and Maintenance Per Month - year 1	12	6,650	79,800	79,800	129,675
12 Operation and Maintenance Per Month - year 2	12	1,330	15,960	15,960	25,935
13 Disposal of water to sewer Per Month	24	1,360	32,640	32,640	53,040
14 Service Connections and electrical power	1	8,450	8,450	8,450	13,731
15 Groundwater Elevation Monitoring, Supply, installation and maintenance of 2 water level monitors	1	1,750	1,750	1,750	0
16 Monitoring of Railway Embankment (Monitoring points, levelling, Network Rail admin charges)	1	26,215	26,215	26,215	2,844
17 Removal of Pipework	1	9,550	9,550	9,550	42,599
Total			527,617	527,617	857,378

Average Weekly Earnings Index Construction has increased between 2000 and 2015

54.7 %

The Building Cost Information Services (BCIS) all in tender price index (TPI) increase between 2000 and 2015

70.3 %

62.5 %

MUNICIPAL YEAR 2016/2017 REPORT NO.

**ACTION TO BE TAKEN UNDER
DELEGATED AUTHORITY**

PORTFOLIO DECISION OF:
Cabinet Member for Environment

REPORT OF:
Director – Regeneration &
Environment

Agenda – Part: 1	KD Num: N/A
Subject: Fords Grove Car Park – Introduction of Parking Controls	
Wards: Winchmore Hill & Bush Hill Park	

Contact officer and telephone number: David Taylor, 020 8379 3576

E mail: david.b.taylor@enfield.gov.uk

1. EXECUTIVE SUMMARY

The report sets out the results of the statutory consultation relating to the introduction of pay and display and other parking controls that will enable Fords Grove car park to better support the town centre rather being used predominately for long stay commuter parking.

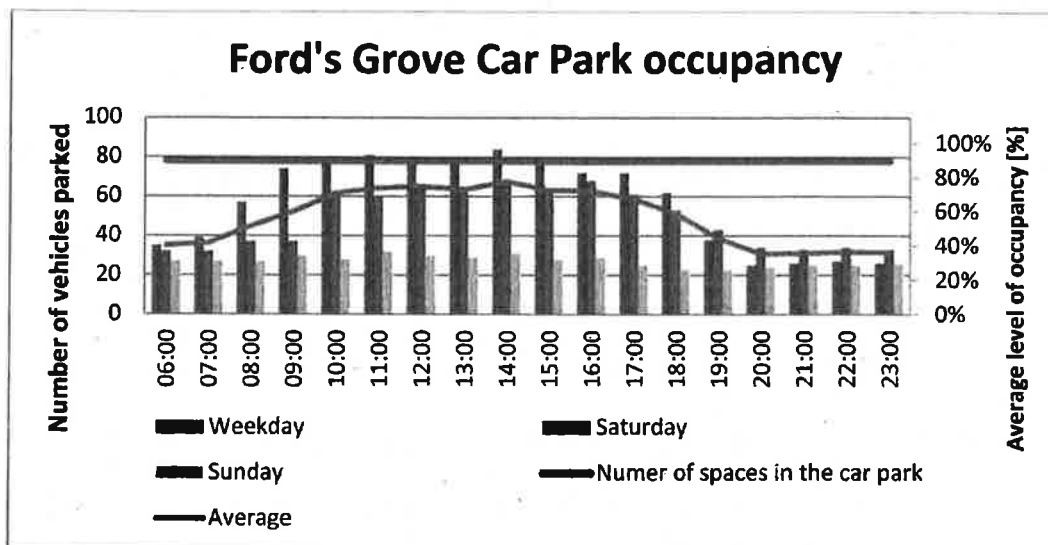
2. RECOMMENDATIONS

- 2.1 To make the traffic management order without modification so the following can be implemented as soon as practicable:
- a) The parking controls for Fords Grove car park set out in paragraph 4.1 of the report and indicated in Appendix 1;
 - b) The additional on-street restrictions set out in paragraph 4.2 of the report and indicated in Appendix 2.
- 2.2 To carry out further consultation with residents and businesses in the area to identify whether there is support for additional on-street parking controls.

3. BACKGROUND

Current Parking Conditions

- 3.1 Fords Grove car park is currently a free car park providing space for approximately 70 vehicles. Surveys confirm that the car park is currently fully occupied for much of the time on weekdays, with some spare capacity on both Saturdays and Sundays.



- 3.2 The pattern of use indicates that there is currently a high level of commuter parking taking place on weekdays with only one third of all parking acts being less than 2 hours.
- 3.3 The nearest streets to the car park are Fords Grove and Farm Road and recent parking surveys highlight existing weekday parking pressure in Farm Road and the western end of Fords Grove in particular. The streets are largely uncontrolled at present, being outside both the Winchmore Hill (1 hour) CPZ and the Queens Avenue (all-day) CPZ.
- 3.4 Many of the properties in Fords Grove and Farm Road benefit from off-street parking and parking surveys suggest that much of the parking pressure is caused by commuters working locally or walking to Winchmore Hill Station.
- 3.5 It is clear from both the surveys and the response from residents that there is presently high demand for space in the car park and on-street in Farm Road and Fords Grove, with residents, shoppers, local employees, commuters into central London and parents and carers dropping off and picking up nursery aged children all competing for limited space. The introduction of parking controls will help manage demand and meet a number of objectives, including:

- Supporting local businesses in Winchmore Hill by providing a greater turnover of parking spaces
- Mitigating for the loss of on-street parking as a result of the Cycle Enfield proposals for Green Lanes
- Ensuring the safe movement of traffic on the adjoining streets
- Ensuring that local residents are not significantly disadvantaged

Cycle Enfield

- 3.6 On 10 February 2016 Cabinet gave approval to undertake detailed design and statutory consultation for lightly segregated cycling facilities and public realm improvements along the A105 between Enfield Town and Palmers Green. Cabinet also granted delegated authority to the Cabinet Member for Environment to approve and implement the final design of the scheme subject to consultation and completion of all necessary statutory procedures.
- 3.7 Section 5.9 of the Cabinet report dealt with the parking implications of the proposals for the A105 and highlighted that in Winchmore Hill (between Ford's Grove and Sainsburys) there are currently 59 on-street pay & display parking bays. With the Cycle Enfield proposals, 45 on-street parking bays (76%) would be retained. To mitigate the loss of the 14 on-street bays, the Cabinet report highlighted the need convert Ford's Grove Car Park to pay & display so that it should better support the town centre.

4. Proposed Changes to Fords Grove Car Park

- 4.1 The proposal for Fords Grove car park, indicated on the plan in Appendix 1, is to introduce controls between 7:30am-6:30pm Monday to Saturday which provide:
- 20 free 'Stop & Shop' bays with a maximum stay of 45 minutes & no return permitted within 2 hours
 - 50 'Pay & Display' bays with the following pricing tariff:

- Up to 1 hour	£1
- 1-3 hours	£2
- 3-5 hours	£3
- Over 5 hours	£5
 - 2 disabled parking bays
- 4.2 It is recognised that the above controls could displace some current car park users on-street, with Ford's Grove and Farm Road being the most vulnerable. The proposal, as indicated on the plan in Appendix 2 was therefore to complement the proposed car park controls with 8am-6:30pm (Monday-Saturday) waiting restrictions along short sections of both Farm Road and Fords Grove to provide passing places for traffic.

Double yellow lines were also proposed at the junction of Ford's Grove and Firs Lane to maintain road safety on the approaches to the roundabout.

Consultation

- 4.3 In line with the requirements of the Local Authorities' Traffic Order (Procedure) (England and Wales) Regulations 1996, notices of the Council's proposal were published on 13 April 2016 in both the London Gazette and the Enfield Advertiser, as well as by way of site notices in the car park and in Farm Road and Fords Grove. In addition, notice was sent to the prescribed statutory consultees and letters were distributed to all residents in Farm Road (between Fords Grove and Beverley Close) and Fords Grove.
- 4.4 No responses were received from the statutory consultees. However, 50 representations were received in response to the letters and notices. The vast majority of comments were from local residents, but some were made by a local business suggesting that provision needs to be made for staff working in local businesses.
- 4.5 Each of response is summarised in Appendix 3, with the table below highlighting the various issues raised:

Issue	Frequency
Charges would add to local congestion & reduce safety	24
Permit parking could help/need controls on southern side of Fords Grove	14
More difficult to drop off/pick up from nursery/adverse impact on nursery	10
Money making scheme	9
P&D previously abandoned	7
Parking should be kept free/no need for change	6
Proposals don't solve congestion/air quality/speed problems/need alternative traffic management	5
Make it more difficult to access driveways	5
Additional w/r won't help/make situation worse/unnecessary	5
Need provision for people working locally	4
P&D won't help local business/will have negative impact/charges excessive	4
Notice defective/lack of informal consultation/defective statement of reasons	3
Car park always has spaces/no complaints about car park	3
Stop & shop bays hard to enforce/will be abused	2
Impact on blue badge holders/dial-a-ride	1
Likely loss of front gardens	1
Impact on property prices	1
No problems finding space on Green Lanes	1
Cycle Enfield not wanted	1
Add to commuter costs	1

- 4.6 Each of the issues raised is considered in turn:
- a) **Charges would add to local congestion & reduce safety**
- 4.7 The overriding concern is that the introduction of P&D in the car park would displace parking on-street and that this would exacerbate existing parking pressures in both Farm Road and Fords Grove. A number of residents highlight that P&D was previously introduced in the early 1990s but was removed shortly afterwards precisely because this displacement took place.
- 4.8 It is accepted that there is a risk that parking would be displaced if car park charges were introduced in isolation. However, the additional waiting restrictions proposed for Fords Grove and Farm Road will ensure that traffic can continue to flow freely even if there is an element of displacement. It is accepted that a range of additional controls could be introduced to improve the situation for residents and these can be investigated further as part of an on-going engagement with residents.
- b) **Permit parking could help/need controls on southern side of Fords Grove**
- 4.9 Several residents felt that the proposed mitigation measures were inadequate and suggested that some type of permit parking or alternative parking controls would be better. A number of practical suggestions were made by residents for better managing on-street parking, including:
- A one hour restriction on the southern side of Fords Grove to prevent long stay commuter parking.
 - A controlled parking zone, either for one hour (like the existing Winchmore Hill CPZ) or all-day (like the existing Queens Avenue CPZ).
- 4.10 Both of the above options are feasible and further consultation with residents is recommended to see if there is a consensus about the type of additional parking controls required.
- c) **More difficult to drop off/pick up from nursery/adverse impact on nursery**
- 4.11 A significant number of comments related to the nursery at 2 Fords Grove, raising concerns that the proposal would be more difficult and potentially less safe to drop off and pick up children.
- 4.12 The removal of long stay parking is expected to free up capacity in the car park, making it more likely that space will be available for people dropping off and picking up from the nursery. In addition, parents and carers will probably benefit from the 20 free parking bays, which are

unlikely to be fully occupied when children are dropped off early in the mornings and in the afternoons.

d) Money making scheme

4.13 A number of comments were made suggesting that the Council was implementing the car park charges simply to raise revenue.

4.14 The primary aim of the proposed controls is to shift use of the car parking from long to short stay, so that it can benefit the town centre rather than commuters. P&D and an appropriate tariff structure is a tried and tested way of achieving this objective. In addition, the legislative framework relating to parking charges prevents them from being introduced simply to raise revenue:

e) P&D previously abandoned

4.15 As highlighted above, P&D was introduced in Fords Grove in the early 1990s but subsequently removed as the car park was underused and parking on-street increased.

4.16 This is useful insight into what happened in the past but the current situation is different as complementary mitigation measures are proposed; on-street parking close to the car park is already much heavier; and there is greater need to provide short-term parking to mitigate for the loss of on-street parking on Green Lanes.

f) Parking should be kept free/no need for change

4.17 A number of people commented that there was no need for change and that the car park should remain free of charge.

4.18 Keeping the car park free will not meet the overriding objective to increase the turnover of spaces so that the car park can better serve the town centre. However, 20 free spaces are to be provided, offering a 'stop and shop' facility for those want to stay for up to 45 minutes. In addition, the car park will remain free after 6:30pm Monday to Saturdays and all day on Sundays, Christmas Day, Good Friday and bank holidays.

g) Proposals don't solve congestion/air quality/speed problems/need alternative traffic management

4.19 Several residents commented that the parking proposals weren't addressing issues of greater concern, including speeding traffic in Fords Grove, local traffic congestion and air quality.

4.20 Fords Grove and Farm Road are both in a 20mph zone and surveys confirm that average and 85th percentile speeds are not currently excessive. The proposed waiting restrictions on the northern side of

Fords Grove and in Farm Road are intended to create passing spaces to ensure that traffic flow (and therefore local air quality) is not unduly affected. Making Fords Grove and Farm Road one-way, as suggested by some, could result in increased speeds and be inconvenient for residents. However, it is acknowledged that an element of rat running takes place along Fords Grove and this and other traffic management options will be picked up as part of the Quieter Neighbourhoods scheme programmed to follow on the introduction of the cycle route on Green Lanes.

h) Make it more difficult to access driveways

4.21 A number of residents referred to existing problems where people try and squeeze into spaces between crossovers on the southern side of Fords Grove, making it difficult to turn in and out of driveways.

4.22 Civil Enforcement Officers can and do issue PCNs where vehicles are parked across dropped kerbs. However, it is acknowledged that there could be a design solution to make this less likely, for instance by installing a restriction or permit parking scheme along the southern side of Fords Grove. This and other options can be explored further as part of the on-going engagement with residents.

i) Additional waiting restrictions won't help/ make situation worse/ are unnecessary

4.23 A number of comments related to the view that the proposed restrictions on the northern side of Fords Grove (to create passing spaces) wouldn't help or would just displace parking elsewhere.

4.24 It is acknowledged that the footway crossovers on the southern side of Fords Grove provide informal passing opportunities, which already help to maintain traffic flow. However, the additional gaps in parking on the northern side of the road will further help to manage on-street parking and traffic flow in the short-term. The need for these restrictions can be reviewed in the light of experience and may well prove unnecessary if a more comprehensive residents parking scheme is introduced.

j) Need provision for people working locally

4.25 Comments were made from two local businesses (the nursery and a letting agency) highlighting the need to provide parking space for people working locally. Specific queries were raised about the provision of permits for local businesses.

4.26 The proposal is specifically aiming to deter long-stay commuter parking in favour of short-term shopper parking. However, in common with other Council car parks season tickets will be available (currently for a fee of

£330 per year). Although not proposed at this stage, if a CPZ is supported by local residents, business bays could also be considered to cater for the needs of local businesses.

k) P&D won't help local business/will have negative impact/charges excessive

4.27 A number of responses suggested that the proposed charges wouldn't help local businesses.

4.28 Experience elsewhere in the borough demonstrates that pay and display is an effective way of ensuring a turnover of spaces, which in turn benefits local businesses. In addition, 20 free spaces are provided for people who only want to park for up to 45 minutes. Usage of the bays will be monitored and kept under review but it is anticipated that the proposed control will benefit rather than dis-benefit local businesses.

l) Notice defective/lack of informal consultation/defective statement of reasons

4.29 A small number of responses (including one from the Winchmore Hill Residents' Association) questioned the level of detail in the notice and statement of reasons, as well as arguing that informal consultation should have taken place before the statutory consultation.

4.30 There is no legal requirement to send letters to affected residents but it was felt appropriate in this instance in view of the potential impact of the scheme. The consultation letter clearly summarised the proposals and provided contact details for those requiring further information. In addition, the statutory notices published on-site and in the local press clearly indicated the hours of operation of the proposed waiting restrictions.

4.31 The statement of reasons stated:

Ford's Grove car park, which is currently unregulated and is predominantly used by motorists for all day parking. Therefore it is proposed to introduce measures to facilitate short-term parking so Ford's Grove car park can better support local shops and services.

It is recognised that the above controls could displace some current car park users on-street, with Ford's Grove and Farm Road being the most vulnerable. It is, therefore, proposed to complement the proposed car park controls with waiting restrictions along short sections to provide passing places for traffic. We are also proposing to introduce double yellow lines at the junction of Ford's Grove and Firs Lane to maintain road safety on the approaches to the roundabout.

4.32 This fully explains the reason for the proposals and it is not necessary to specifically refer to Cycle Enfield in the statement. In any event, the link with Cycle Enfield was clearly set out in the letter sent to residents.

4.33 There is no legal requirement to carry out informal as well as statutory consultation relating to the traffic order making process. In addition, it should be noted that the Council, by writing to all affected frontages in Fords Grove and Farm Road, has gone well beyond the minimum consultation requirements set out in the relevant regulations.

m) Car park always has spaces/no complaints about car park

4.34 Two respondents suggested that the car park always has space and one of the local businesses mentioned that they had never received any complaints about the car park.

4.35 The parking surveys demonstrate that the car park is full for much of the day during the week and operational problems have arisen due to vehicles parking outside the marked bays. It is acknowledged that the car parking has spare capacity on Saturdays and Sundays at present.

4.36 Whilst local businesses may not have received specific complaints about the Fords Grove car park, parking has emerged as a key issue during the Cycle Enfield consultation and the Council is committed to providing additional short-stay parking to mitigate for the loss of on-street parking on Green Lanes.

n) Stop & shop bays hard to enforce/will be abused

4.37 The Council's ability to enforce the 20 free 'stop and shop' bays was questioned, along with a concern that the bays could be misused by a local car-wash rather than people visiting the local shops.

4.38 Although not as straight forward to enforce as P&D, short term bays can be enforced by civil enforcement officers, as can the requirement not to re-park in one of the bays with two hours. Use of the bays will be monitored post-implementation to ensure that they are being effectively used to support the town centre and the method of control could be amended if spaces were being abused, for instance by a local car wash.

o) Impact on blue badge holders/dial-a-ride

4.39 As at present, two dedicated disabled bays are proposed in Fords Grove car park. In addition, blue badge holders will be able to park free of charge in all bays within the car park. Residents without off-street parking (who also meet the relevant eligibility criteria) would be able to apply for an on-street disabled persons parking bay. As presumably occurs at present, Dial-a-Ride vehicles, taxis and mini-cabs can temporarily park

across driveways to drop off or set down. As a last resort, vehicles picking up and setting down would also be able to utilise one of the 'passing gaps' on the northern side of Fords Grove.

p) Likely loss of front gardens

- 4.40 One response suggested that some residents may choose to pave over their front gardens in response to additional on-street parking pressure. However, this is not a certainty and those that do may retain an element of soft landscaping. It is noted that several of the properties in Fords Grove that have retained their front gardens have the benefit of rear access via Beverley Close, reducing the need to utilise front gardens for parking.

q) Impact on property prices

- 4.41 It is not anticipated that the proposals would have any impact on property prices but, in any event, this should not be a determining factor in a scheme intended to benefit the wider town centre economy.

r) No problems finding space on Green Lanes

- 4.42 Whilst spaces are currently available on Green Lanes at certain times, this may not be the case in the future given that 14 on-street spaces are lost as a result of the Cycle Enfield proposals for the A105.

s) Cycle Enfield not wanted

- 4.43 The extensive A105 Cycle Enfield engagement has demonstrated a mixed response to the scheme, with many people supporting the scheme as well as opposing it. In any event, Cabinet have agreed to proceed with the scheme and endorsed the need for Fords Grove car park to become a shopper car park to support the town centre.

t) Add to commuter costs

- 4.44 It is acknowledged that commuters that continue to use Ford's Grove car park would be faced with higher costs. However, the car park does little to support the town centre at present and the transition to a short rather than long stay car park should address this situation. Commuters will be eligible for season tickets if they want to continue to park in the car park. Alternatively they have the option of parking further afield or, where feasible, changing mode.

Summary

- 4.45 Having considered all of the comments, representations and objections, it is recommended that the car parking charges are introduced as proposed but operation of the car park monitored post-implementation to make sure that the car park is meeting the objectives set out in paragraph 3.5.
- 4.46 However, it is clear that the car parking charges would lead to additional vehicles parking on-street and some form of on-street controls are necessary to maintain the safe movement of traffic.
- 4.47 The proposed additional waiting restrictions to create passing places on both Fords Grove and Farm Road, together with the junction protection measures are the minimum necessary to mitigate the impact of displaced traffic. However, several residents suggested possible alternatives that could be of greater benefit to residents, including:
- Implementing a control parking zone
 - Implementing a one-hour restriction on the southern side of Fords Grove to reduce the current level of parking that can obstruct accesses and make it difficult to turn on and off driveways.
 - Introduce permit bays on the southern side of Fords Grove
- 4.48 It is therefore proposed that a two-stage approach is taken, with the measures originally proposed implemented in the short term whilst further consultation is carried out with local residents to explore whether there is a consensus around alternative controls.

5. ALTERNATIVE OPTIONS CONSIDERED

- **Do nothing** – this would maintain the status quo but would mean that the car park continues to be used predominantly by commuters and does little to support the town centre economy.
- **Defer implementation of charges in Fords Grove car park whilst further consultation is carried out** – this would allow further consultation with residents on possible mitigation measures but a protracted consultation could significantly delay the introduction of measures intended to create a short-stay shopper car park that supports the town centre economy.
- **Implement the charges in Fords Grove car park but not the proposed mitigation measures in Fords Grove and Farm Road** – this would result in the displacement of the parking into the surrounding streets and adversely affect traffic flow.

6. REASONS FOR RECOMMENDATIONS

- 6.1 The proposed recommendation meets the objectives set out in paragraph 3.5 above. However, further consultation with local residents is proposed to identify whether there is an alternative scheme for managing on-street parking that is supported by the local community.

7. COMMENTS OF THE DIRECTOR OF FINANCE, RESOURCES AND CUSTOMER SERVICES, AND OTHER DEPARTMENTS

7.1 Financial Implications

- 7.1.1 The cost of implementing the proposed measures is estimated to be £32,700 and will be met via the 2016/17 mini-Holland funding allocated to the project by Transport for London.

- 7.1.2 The on-going maintenance and enforcement cost is mitigated by the income that will be generated by both car park charges (including pay & display) and enforcement activities.

- 7.1.3 The objective of the scheme is to ensure an effective turnover of spaces and not to generate revenue. However, it should be noted that income from off-street enforcement activities are governed by Section 55 of the Road Traffic Regulation Act 1984. This requires the Council to maintain a Special Parking Account setting out income and expenditure relating to, amongst other things income from the issue of penalty charge notices in off-street car parks. A separate general fund account holds the income and expenditure relating to off street parking.

- 7.1.4 Any surplus in the Special Parking Account can only be used for the purposes prescribe in Section 55 (4) of the Road Traffic Regulation Act 1984, such as:

- Provision and maintenance of off-street parking
- Provision and operation of public transport services
- Highway improvements of maintenance
- Environmental improvements
- Measure to help implement the Mayor's Transport Strategy

7.2 Legal Implications

- 7.2.1 Under the provisions of the Road Traffic Regulation Act 1984, as amended and Traffic Management Act 2004, the Council has the power to introduce and maintain parking charges for on and off street parking.

- 7.2.2 Section 122(1) Road Traffic Regulation Act 1984 states that it shall be the duty of every local authority upon whom functions are conferred by or under the Act (so far as practicable having regard to the matters specified in s122(2)) to secure the expeditious, convenient and safe

movement of vehicular and other traffic (including pedestrians) and the provision of suitable and adequate parking facilities on and off the highway. S122(2) specifies a number matters may be taken into account, including the effect on the amenities of any locality, strategies prepared under the Environment Act 1995, and any other matters appearing to the local authority to be relevant. In addition, the relevant Guidance issued by the Government makes it clear that Authorities should never use parking charges just to raise revenue or as a local tax.

7.2.3 The proposed introduction of car park charges and additional waiting restrictions will require the making of a Traffic Management Order following the procedure set out in The Local Authorities' Traffic Orders (Procedure) (England and Wales) Regulations 1996.

7.3 Property Implications

The report raises no property issues.

8. KEY RISKS

Strategic	Failure to deliver better utilisation of the car park could impact on the Council's strategic aim to deliver a successful Cycle Enfield programme that achieves the associated health, transport and town centre benefits. This risk is mitigated by the proposal to ensure that the car park is more effectively managed.
Operational	The implementation of parking charges in isolation could lead to parking being displaced onto the surrounding streets. This is mitigated by the introduction of additional on-street parking controls, which will be developed further in consultation with local residents.
Financial	The introduction of car park charges will incur an initial capital cost and an on-going maintenance and enforcement cost. This risk is mitigated by the income that will be generated by both car park charges and enforcement activities.

Reputational	<p>The introduction of car park charges may be seen by some as a means to generate income for the Council. This is mitigated by the fact that the Council has to operate within a prescribed legislative framework relating to parking charges.</p> <p>By implementing a scheme despite some local opposition, it may be perceived that the Council is not listening to the views of residents. This is mitigated by clear and on-going communication explaining the wider benefits of the scheme.</p>
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9. IMPACT ON COUNCIL PRIORITIES

9.1 Fairness for All

9.1.1 Extensive consultation and engagement has taken place in relation to the Cycle Enfield proposals for the A105 and a wide range of views have been expressed. In addition, specific consultation has taken place with residents regarding the introduction of parking charges in Fords Grove car park and additional on-street parking controls on both Fords Grove and Farm Road. Further consultation will be undertaken to develop and refine the on-street controls.

9.2 Growth and Sustainability

9.2.1 The introduction of parking controls will help achieve a greater turnover of spaces, enabling the car park to better support the town centre.

9.3 Strong Communities

9.3.1 As far as practicable, the final options for on-street parking controls will be developed in conjunction with the local community.

10. EQUALITY IMPACT IMPLICATIONS

10.1 The Council has a duty when introducing new policies and making changes to services to have due regard to the need to eliminate discrimination, advance equality of opportunity between persons who share a relevant protected characteristic, and foster good relations between persons who share a relevant protected characteristic and persons who do not share it. This includes persons of different ages, disability, race and sex (along with other protected characteristics). The content of the duty is set out in section 149 of the Equality Act 2010. The

particular duties in respect of the disabled should be noted (section 149(4)).

- 10.2 With respect to the proposals for Fords Grove, officers have produced an Equality Impact Assessment (EQIA) which is appended to the report. This identifies whether or not (and to what extent) the proposals have an impact (positive or negative) on a particular equality target group, or whether any adverse impacts identified have been appropriately mitigated.
- 10.3 It is noted that the proposals are related to the Cycle Enfield scheme for the A105, for which an EQIA has also been undertaken.

11. PERFORMANCE MANAGEMENT IMPLICATIONS

- 11.1 The proposal supports the commitment in its Business Plan to:
- Maintain a clean, green sustainable environment
 - Work in partnership to ensure that Enfield is a safe and healthy place to live
- 11.2 Specifically, the car park charges form part of the wider Cycle Enfield programme which aims to deliver both environmental and health benefits.

12. PUBLIC HEALTH IMPLICATIONS

- 12.1 Cycle Enfield provides a unique opportunity to improve the health of the borough's residents and address health inequality.
- 12.2 Compared to those who are least active, sufficient physical activity reduces all-cause mortality and the risk of heart disease, cancer, mental health issues and musculo-skeletal disease by approximately 20 to 40%. These conditions account for 70% of the NHS budget.
- 12.3 The greatest gain in the health of the public will be from increased physical activity. However, other benefits may accrue to the wider Enfield community including the avoided costs of motorised transport that could result from a long-term modal transport shift towards cycling.

Background Papers

No background papers have been used in the preparation of this report.

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London Borough of Enfield LA 066353 2011

None

PROPOSED DOUBLE YELLOW LINE

EXISTING DOUBLE YELLOW LINE


PROPOSED SINGLE YELLOW LINE
Mon-Sat 8.00am to 6.30pm

EXISTING DROP KERB

Rev	Drawn/Child	Revision Details	Date

FORDS GROVE AREA

PROPOSED WAITING RESTRICTIONS



ENFIELD Council

IAN DAVIS - Director, Environment
P.O. Box 52, Civic Centre
Silver Street, Enfield, Middx EN1 3ND
Tel: 020 8379 1000 / Fax: 020 8379 3475

Date	10/12/15	Drawn	TS	Checked	
Scale	NTS	Scheme/Plan No.	C201781	From Site	A3L
Drawing No.	LBE-TE/3037/04				



Appendix 3 - Summary of Consultation Responses

Ref.	Comment
1	Car park should remain free as lack of parking for commuters & visitors in nearby roads. Charges would add to local congestion and increase risk of collisions.
2	Already heavy on-street parking restricts traffic flow & makes it difficult for residents to reverse off driveways. More restrictions on the house side of Fords Grove may help. Permit parking may be required.
3	Already excessive parking in Farm Road, making it difficult to manoeuvre off driveways & impacting on traffic flow. Current proposals ignore residents interests – should look at resident parking & P&D in Farm Road
4	P&D didn't work previously. Farm Road busy as a) part of a cut through from Firs Lane & b) several nearby schools. Proposed passing spaces serve no purpose as already many crossovers. Problems made worse by allowing development on station car parks. Should have used site adjacent to station for car parking rather than farmers market. Cycle Enfield proposals for signals at A105/Fords Grove will add to congestion if area
5	Already parking problems in Fords Grove & charging will make the situation worse. Additional yellow lines will further reduce parking for residents
6	Questioning whether there will be parking for business workers or business permits available
7	Proposals likely to make existing parking situation worse for residents. Car park should continue to be free
8	Parking will be displaced into the surround roads making it less safe. Will be more difficult to drop off/pick up from nursery. Proposals only about raising income
9	Parking impacts on traffic flow in Fords Grove but don't support proposals (Parking also a problem in Walsingham Road and Uvedale Road in Enfield Town)
10/10a	No need for restrictions at eastern end of Fords Grove as nobody parks there. Passing areas are too short in length and are on speed cushions where no one parks anyway. Proposals do not address problems with speeding traffic in Fords Grove. Need a scheme that reduces level of traffic in Fords Grove.
11	Proposals suggest pressing ahead with Cycle Enfield & ignoring views of local residents Two previous proposals to introduce P&D were rejected. The free car park is a valuable facility for commuters. Fords Grove is already heavily parked
12	Proposed parking charges are excessive – will deter stop & shop & will not benefit local shops Proposed parking charge will impact on local (letting) business. Suggest need for business permits.
13	Farm Road is already full, making passing difficult. The proposal will make the situation worse. A CPZ in Fords Grove and Farm Road would stop commuter parking would. Suggest DYs o/s 215/217 Firs Lane to assist access by emergency services.
14	Proposal will not solve congestion & air quality problems caused by cars. Proposal will intensify demand for on-street space & passing places will not prevent congestion. Suggest road closure at Firs Lane end of Fords Grove. Alternatively, could introduce 1-2 hour restrictions on northern side of Fords Grove to prevent commuter parking. On southern side, suggest single yellow line, except across driveways as currently problems with vehicles blocking driveways.

Ref.	Comment
15	Scheme will have negative impact on residents and business. Question whether business permits will be issued. P&D has been previously tried
16	Concerned that 'stop & shop' bays will be used by nearby car wash. Support proposal for waiting restrictions in Fords Grove.
17	Proposal makes it more difficult for parents dropping off/picking up from the nursery
18	Proposal makes it more difficult for parents dropping off/picking up from the nursery
19	Proposals will push parking problems further along Fords Grove/Farm Road, making it more difficult for residents. Particular impact on blue badge holders and dial-a-ride. Needs to be a CPZ on the southern side of Fords Grove, Non-compliance with 20mph speed limit.
20	Proposals will lead to even more parking pressure in Fords Grove. Increased problem finding space when return from work at 3pm. Proposed additional restrictions will make the situation worse. If parking charges have to be introduced should consider 1 hour residents parking scheme. Unfair that residents have to pay for permits. May have to consider paving over front garden, at significant cost.
21/21a	P&D was previously a failure, resulting in an empty car park and more cars parked on-street. Result will be more cars trying to park between dropped kerbs, making access more difficult. Council should look at residents parking scheme on south side of Fords Grove
22	Welcomes yellow line restriction. Should look at 1 hour restriction to deter commuters
23	Proposal will make on-street parking more difficult. Council should look at residents parking scheme
24	Car park is an asset for area and helps reduce commuter parking on-street. Charging is to generate income for the Council.
25	Charges will result in more parking in surrounding streets. Yellow lines will add to pressure for parking space
26	Charges are about raising money rather than supporting local businesses
27	Proposals could make current parking situation worse and will not get more people to cycle. Previous proposals for Fords Grove were not implemented. Should do more to make motorists aware of 20mph speed limit. CCTV sign but no enforcement of speed limit takes place. Only the Council benefits from the introduction of parking charges.
28	Proposals make it more difficult to pick up/drop off from nursery and will have a negative impact on businesses. Charges solely proposed to increase revenue for the Council.
29	Proposals make it more difficult to pick up/drop off from nursery. The current car park provides a safe environment for children to be taken in and out of cars.
30	Would be better to restrict parking between 10:30-11:30 Monday to Friday. Car park charges will just increase local congestion.
31	P&D will simply force more cars onto nearby roads. Proposals make it more difficult to safely pick up/drop off from nursery. Only benefit of P&D is additional income for the Council.
32	Proposals make it more difficult to safely pick up/drop off from nursery & will impact on nursery staff.

Ref.	Comment
	Charges will force more cars onto the roads Yellow line on south side of Fords Grove makes sense but not on the north side. Scheme is just a cash cow
33	Proposals make it more difficult to pick up/drop off from nursery & will be detrimental to the safety of children & pedestrians.
34	P&D didn't work before in 1990s -- displaced parking into nearby streets. Plans should be dropped or substantially modified, including residents parking in Farm Road. Displacement of residents to distant off-street parking is hazardous. Keeping current street environment is advantageous and reduces risk of loss of more front gardens, with associated impact on drainage & environment.
35	Will make parking pressures in Farm Road worse, including hindering accesses. Concern about impact of additional pressure and yellow lines on property prices. Car park always has space for shoppers at present -- would like to see car park usage data.
36	Proposals will have adverse impact on nursery. Would make it more difficult to transport heavy materials etc. to the nursery. Would also affect local businesses
37	Own local business & no complaints about Fords Grove car park. Will displace parking into surrounding streets. Will make it more difficult to drop off child at nursery. Never had problem parking on Green Lanes to visit shops. Scheme is about making money and the bike scheme
38	Cycle Enfield not wanted by the local community & shouldn't proceed with car park changes. Business interest best served by keeping car parking free. Scheme will displace parking and add to congestion and make it more difficult for residents to park. Space is currently available for shoppers in car park. Proposed passing spaces will add to parking pressure and compound use of roads as rat runs
39	Proposals will reduce parking for local business employees & affect safety of school & nursery children. Car parking supports local commuters using station & stops them clogging local roads & causing congestion. Residents in Fords Grove have off-street parking so not affected by current on-street parking. Charges are about making money for the Council.
40	Charges are about making money for the Council. Car park is needed by local community as parking already difficult on-street. P&D will displace traffic to the surrounding streets and impact on safety, congestion noise & emissions.
41	Charges would add to cost of commuting into London
42	P&D would have adverse impact on local business and residents, due to displacement of parking.
43	Don't want any change in Fords Grove -- roads is peaceful & traffic flow is smooth
44	Letter sent to residents was inadequate as it did not state days & times of restrictions
45	Current parking is fundamental to the local community, nurseries, schools, shops etc. and should not be used to make money for the Council.
46/46a	Current free car park a blessing for people who use the local shops and those who commute by train from Winchmore Hill station
47	Proposals will make it more difficult to pick up & drop off from nursery. They will also have a negative impact on other local businesses. Proposals will lead to displaced parking and add to pressures for local residents and their visitors, who do not all have off-street parking.
48	No informal consultation carried out to fully explain proposals. No justification in statement of reasons for the imposition of parking charges. No mention of Cycle Enfield in the statement of reasons, therefore misleading & disingenuous. Council should either a) withdraw current proposals & develop new scheme to extend Queens Avenue CPZ to include Fords Grove, farm Road and

Ref.	Comment
	<p>Beverley Close. Bays should be provided on south side of Fords Grove & both sides of Farm Road. Free bays should be provided elsewhere, except where additional single yellow lines were proposed. Council should carry out further detailed consultation on the above proposals, making it clear that aim was to provide substitute parking for that lost on Green Lanes – if supported, a new TMO should be published; or b) withdraw the current proposals and do nothing.</p>
49	<p>Expense of additional enforcement cannot be justified. P&D was in place 20 years ago and caused problems. Council should act in interests of all its residents and not need to cater for cars. Farm Road and the part of Firs Lane between Fords Grove & Farm Road should be one-way going west.</p>
50	<p>Proposals don't address rat running and safety concerns in Fords Grove - may reduce visibility around crossovers by displacing cars onto surrounding roads. Parked cars obstructing crossovers is already a problem – this could be addressed by additional restrictions on southern side of Fords Grove. Restrictions opposite No. 10 would help too.</p>

Enfield Council Predictive Equality Impact Assessment/Analysis

NB if there is likely to be an impact on different groups of staff as a result of this proposal, please also complete a restructuring predictive EQIA form

Department:	Regeneration & Environment	Service:	Traffic & Transportation
Title of decision:	Fords Grove Car Park – Introduction of Prking Controls	Date completed:	17 08 2016
Author:	David Taylor	Contact details:	020 8379 3576 or david.b.taylor@enfield.gov.uk

1 Type of change being proposed: (please tick)

Service delivery change/ new service/cut in service	<input checked="" type="checkbox"/>	Policy change or new policy	<input type="checkbox"/>	Grants and commissioning	<input type="checkbox"/>	Budget change	<input type="checkbox"/>
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2 Describe the change, why it is needed, what is the objective of the change and what is the possible impact of the change:

Fords Grove car park is currently uncontrolled and, as a result, is used extensively for long-stay commuter parking rather than short-stay parking that supports the local town centre. The proposal is to introduce car parking controls in the form of Pay & Display that operate between 7:30am to 6:30pm Monday to Saturday. In addition, 20 time-limited bays are proposed where parking is free for up to 45 minutes. The two existing bays for blue badge holders will be retained.

Additional on-street controls are proposed for Fords Grove and Farm Road to address the potential for overspill parking once the new charges are introduced.

3. Could the proposal discriminate, directly or indirectly these groups?	N	N	N	N	N	N	N	N	N	N
4. Could this proposal affect access to your service by different groups in the community?	Y	N	N	N	N	N	N	N	N	N
5. Could this proposal affect access to <u>information</u> about your service by different groups in the community?	N	N	N	N	N	N	N	N	N	N
6. Could the proposal have an adverse impact on relations between different groups?	N	N	N	N	N	N	N	N	N	N

If Yes answered to questions 3-6 above – please describe the impact of the change (including any positive impact on equalities) and what the service will be doing to reduce the negative impact it will have.

Positive impacts:

- The two existing dedicated disabled bays in Fords Grove car park will be retained
- There is likely to be a greater chance of finding a space in the car park than at present
- Blue badge holders will be able to park in other bays in the car park free of charge*
- Blue badge holders will be able to park for up to three hours on the proposed waiting restrictions on the northern side of Fords Grove*

* In line with the requirements of The Local Authorities' Traffic Orders (Exemptions for Disabled Persons) (England) Regulations 2000

Negative impacts:

- Additional parking pressure in Fords Grove and Farm Road may it more difficult for blue badge holders to park close to their homes, if they don't have the benefit of off-street parking. This is mitigated by the fact that residents could apply for a dedicated on-street disabled persons parking bay, which would be provided subject to the applicant meeting the Council's adopted criteria.
- The statutory consultation also revealed a concern that Dial-a-Ride vehicles, taxis and minicabs may find it more difficult to park close to someone's home. This is mitigated by the fact that, as presumably occurs at present, Dial-a-Ride vehicles, taxis and mini-cabs can temporarily park across driveways to drop off or set down. As a last resort, vehicles picking up and setting down would also be able to utilise one of the 'passing gaps' on the northern side of Fords Grove

*If you have ticked yes to discrimination, please state how this is justifiable under legislation.

5. Tackling Socio-economic inequality Indicate Yes, No or Not Known for each group	Communities living in deprived wards/areas	People not in employment, education or training	People with low academic qualifications	People living in social housing	Lone parents	People on low incomes	People in poor health	Any other socio-economic factor Please state:
Will the proposal specifically impact on communities disadvantaged through the following socio-economic factors?	N	N	N	N	N	N	N	N
Does the service or policy contribute to eliminating discrimination, promote equality of opportunity, and foster good relations between different groups in the community?	N	N	N	N	N	N	N	N
Could this proposal affect access to your service by different groups in the community?	N	N	N	N	N	N	N	N
If Yes answered above – please describe the impact (including any positive impact on social economic inequality) and any mitigation if applicable.								
No negative socio-economic impacts have been identified								
6. Review								
How and when will you monitor and review the effects of this proposal?								
<ul style="list-style-type: none"> • The use of Fords Grove car park will be monitored on an on-going basis. • Further consultation is proposed to consider alternative ways of managing overspill parking that may offer greater protection for local residents. 								

Enfield Council Predictive Equality Impact Assessment/Analysis

NB if there is likely to be an impact on different groups of staff as a result of this proposal, please also complete a restructuring predictive EQIA form

Action plan template for proposed changes to service, policy or budget

Title of decision: **Fords Grove Car Park – Introduction of Parking Controls**

Team: **Traffic & Transportation** Department: **Regeneration & Environment**

Service manager: **David Taylor**

Identified Issue	Action Required	Lead Officer	Timescale/ By When	Costs	Review Date/ Comments
Use of car park	On-going monitoring of usage of free & P&D bays	David Morris	On-going	Nil	
Greater overspill parking	Consultation with residents on need for additional on-street controls	David Taylor	To commence prior to new charges coming into operation	Minimal	

Please insert additional rows if needed

Date to be Reviewed: September 2017

APPROVAL BY THE RELEVANT ASSISTANT DIRECTOR - NAME: Bob Griffiths SIGNATURE.....

This form should be emailed to joanne.stacey@enfield.gov.uk and be appended to any decision report that follows.

