

Figure 17: Football Pitch Waste Management



3.6.11 University Technical College

All waste from the UTC will be managed by THFC. The FM teams from the UTC will collect waste within the building and transfer it to the waste and recycling area, where it will then become the responsibility of THFC from both a duty of care and a financial respect. No designated storage space within the waste and recycling area will be provided for waste generated from the UTC.

3.6.12 North-east Building

Goods delivery and waste collection to the north-east building is to be managed via their own small goods and waste area within the building's independent core and removed via Worcester Avenue.

3.6.13 NFL Games and Concerts

The current approach is for stage equipment, props, goal post and other equipment required for these events to be brought onto the field of play by arctic lorries. All specialist wastes, such as props etc. will be removed following the event. THFC will deal with all other waste generated by these events.

Consideration has been given to a worse-case scenario in terms of waste generation within the stadium. This would be a football match and an NFL game or other sporting within one weekend. This would need to be managed by increased collection, with pick-ups between the games and increased FM team staffing levels. There is sufficient spatial capacity within the waste and recycling area.

3.7 Logistics and Other Issues

3.7.1 Incoming Goods

In order to develop an effective waste servicing strategy and ensure the building can operate in an efficient and sustainable manner, it is imperative to understand goods servicing and access throughout the stadium. Large amounts of goods will be entering the stadium via the service yard and loading dock for transportation around the building. Goods will be unloaded, brought into the stadium and distributed to the appropriate locations throughout the stadium using EVs. No dedicated goods area is located within the vicinity of the service yard and loading dock. Therefore, goods including food and drink, products associated with the retail, office, media and player facilities, FM and cleaning operations and hospitality will be distributed directly upon arrival (i.e. no temporary holding) to where they are needed within the stadium and then removed from their packaging. Packaging will be bulked locally before being brought to the waste and recycling area, ideally in the now empty goods cages. THFC will encourage the delivery of goods in bulk to minimise the number of vehicle trips to the stadium, particularly on match days, immediately before and after matches.

Incoming goods for the THFC Experience will be imported to the stadium in smaller vehicles from Worcester Avenue. Current proposals indicate that goods will be brought onto Level 00 and brought into the THFC experience via the rear entrance directly into the goods and waste storage area. Most of the items to be sold within the store will be de-packaged at the Club's off-site warehouse so that the amount of packaging waste generated is minimised.

Where possible efforts will be made to minimise the amount of packaging brought to the stadium with as much of the packaging returned to the supplier for re-use or recycling as detailed in **Appendix C**.

Goods delivery to the north-east building is to be managed via their own small goods and waste area which will be constructed within the service yard.

3.7.2 Security

Access from the highway will be through a security barrier system and only recognised vehicles will be allowed to enter the service yard. In addition, access to each of the waste bays will be controlled by a motorised roller shutter which will be access controlled.

There will be restricted access to the waste and recycling area and additional access restrictions to the clinical and hazardous waste storage area (likely to be in the form of a locked cabinet or caged area) to ensure building user safety. It is anticipated this will be via a swipe card or key code system. All clinical waste will be tagged, double bagged and containerised in lockable cages or boxes.

All waste management operations, including the collection and emptying of compactors and removal of baled recyclables will be overseen by the FM team and stadium security. There will be a security office within the service yard next to the waste and recycling area from which goods delivery and waste collection for the stadium, UTC and THFC experience will be managed.

3.7.3 Education

THFC will aim to educate fans about where bins are located and provide clear signage with recycling and disposal guidance. The key is to try and change fans behavioural patterns when it comes to waste as they will be used to not participating in recycling initiatives, as there is minimal recycling within the existing THFC stadium. A number of initiatives to encourage fans to recycle within the stadium will be explored by THFC, these initiatives are listed in **Appendix C** and include the use of leaflets, loudspeaker announcements and the football programmes.

3.7.4 Duty of Care

A Waste Transfer Note (WTN) is required for each load (i.e. container, bin or bag of waste, compactor or other receptacle) of waste that leaves the THFC site. Copies of these WTNs need to be kept for a minimum of two years as they are written proof that the waste producer is handling their waste correctly and in line with legal requirements. It is possible to obtain a season ticket if the type of waste is consistent. With regards to the UTC, THFC will need to agree to manage their waste and take responsibility for this waste from both a duty of care and a financial respect.

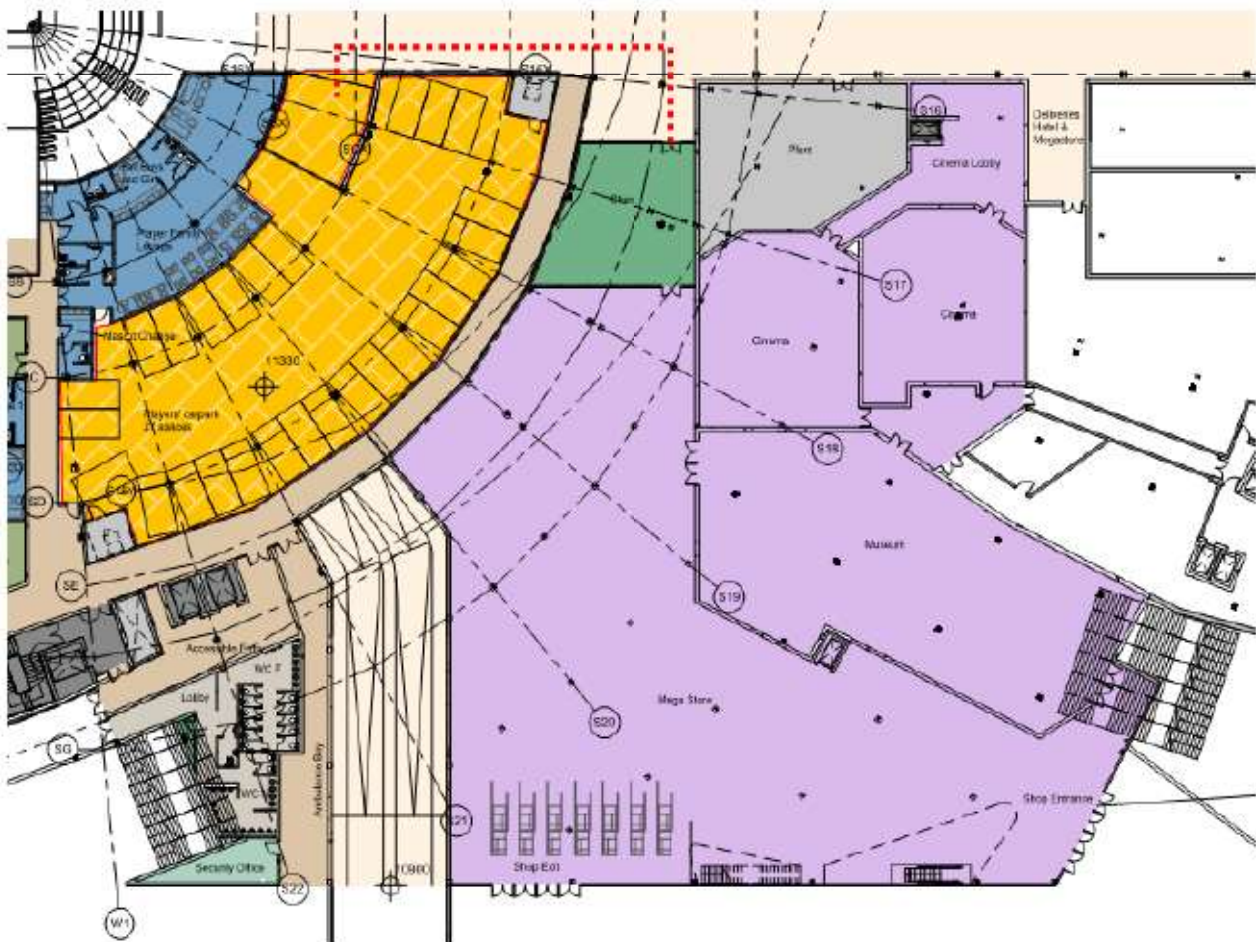
3.7.5 Retractable Pitch Out

Occasionally the retractable football pitch will be out of position and will occupy the majority of the car parking area on Level 00. This will limit access to the THFC hotel and THFC experience back of house areas.

3.7.6 Hotel Waste Management

When the pitch is retracted internal arrangements in the stadium will not be affected, waste generated within the THFC Experience however will not be able to be transported across the car park. As such waste from the THFC Experience will be stored in the players car park immediately adjacent the development as detailed in **Figure 18**. This car park will not be in use when the pitch is extended and is sufficiently sized to hold a minimum of 3 days waste generation from THFC Experience and the hotel.

Figure 18: THFC temporary waste storage solution



4 Waste and Recycling Area

4.1 Storage and Processing

The waste and recycling area occupies an area of approximately 337m² at the north-east of the stadium on Level 00 with an additional 57m² of external space for service and waste loading. As detailed in **Section 4** and **Section 5**, all waste generated throughout the stadium and from the THFC experience, public square and UTC will be brought to this area for temporary storage, processing, bulking and subsequent removal off-site.

All waste management operations will be overseen by the FM team and stadium security. There will be a security office within the service yard next to the waste and recycling area from which waste collection will be managed.

The waste and recycling area has been designed to include space for the following storage areas and equipment:

- A temporary bin storage area for commingled recycling (mixed plastics, glass, paper and cardboard with a small volume of metal cans also anticipated), residual waste and organic (food). In additional space for the storage of glass bins from hospitality areas should be allocated. It is anticipated that once bins have been emptied and washed they will be returned to the intermediate waste rooms throughout the stadium as quickly as possible;
- A dedicated secure cabinet or caged area for the storage of clinical, medical and any hazardous wastes. All clinical waste will be tagged, double bagged and containerised in lockable cages or boxes;
- Locked confidential waste bins likely to be up to 5 x 240 litre bins. THFC may prefer to shred their own confidential waste within their offices and dispose of the shredded paper within the mixed recycling bins;
- Bulky wastes will be stored within the furniture store in the basement so no space for bulky waste is required;
- A portable residual waste compactor (approximately 30m³ capable of holding up to 8 tonnes of waste) with an attached bin lift. The typical dimensions of the compactor would be 2.51m in height, 2.4m wide and 6.1m in length;
- Space for the storage of a small quantity of WEEE wastes that will be generated and a battery bin;
- A bin wash area with appropriate drainage provision;
- Some spare capacity to allow for flexibility in the event of the worse-case scenario in terms of waste generation which would be a football match and an NFL game or other sporting event within one weekend;
- Space for the storage of the temporary, wheeled three-stream honesty bins that will be used at all fan entrances on match days. These will be folded away when not in use;
- The 1100 litre bins containing grass waste will be brought into the waste and recycling area on collection days (anticipated to be three times a week) so spare capacity for the temporary storage of these bins will be required. It is hoped that this waste, along with the food waste collected within the stadium can be taken to an Anaerobic Digestion (AD) plant;
- As a minimum, three balers, one for cardboard and paper, one for green and one for clear plastics will need to be provided. The balers could be provided as part of an elevated mini-MRF system which THFC are currently considering as an effective solution to the waste management challenges within the stadium;

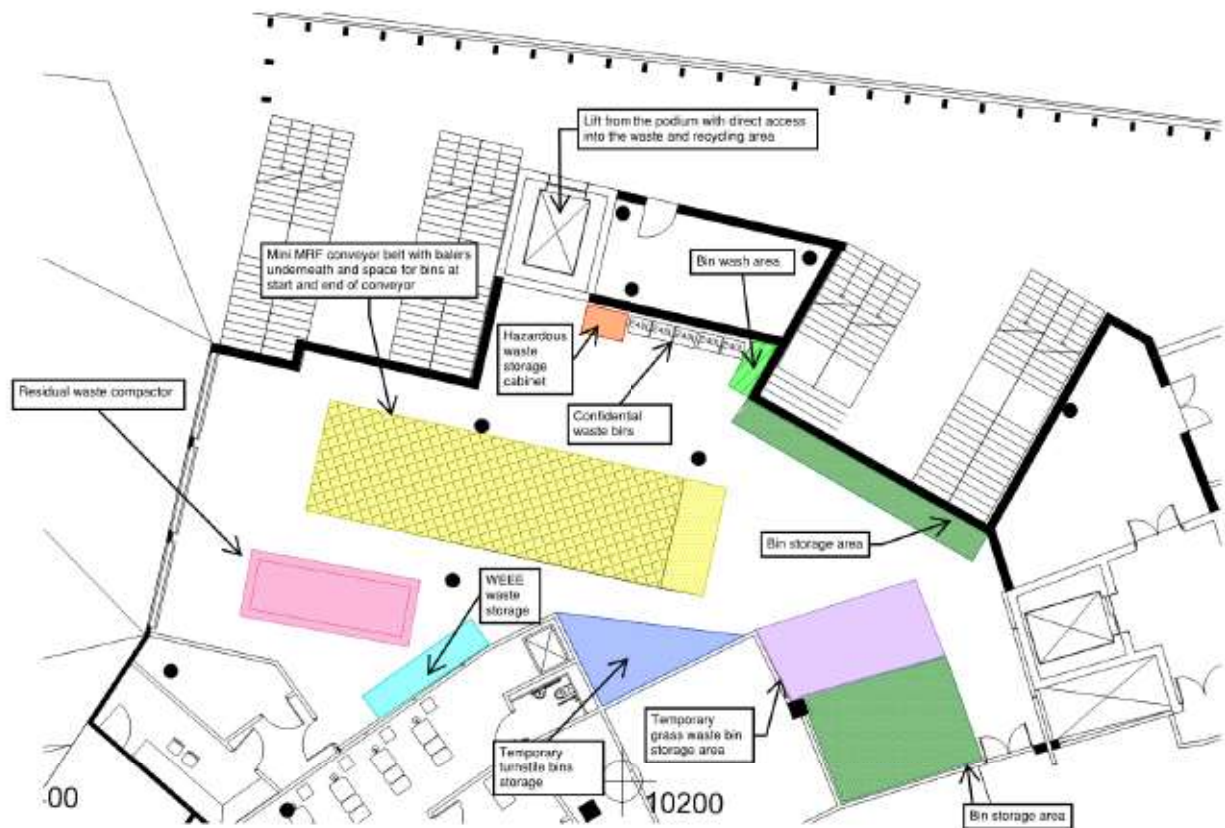
Figure 19: Examples of balers for use within the Waste and Recycling Area



- An elevated mini-MRF conveyor belt system which would comprise an elevated platform on which the operatives picking the waste could stand and conveyor belt with space for 1100 litres bins and / or a plastic and cardboard baler beneath it is being considered by THFC. The MRF would contain vertical drop shoots from the elevated platform to the bins or balers beneath the direct vertical drop chutes to prevent spilling of recyclables. The MRF would be fitted with a bin lifter to enable wastes to be tipped directly onto the conveyer belt. While the upfront costs of the MRF would be high this system would facilitate quick, high quality effective recycling within the stadium, increase waste clearance times within the stadium bowl, concourse areas and throughout the stadium and reduce the number of compactors that would be required within the stadium and the number of collections required. In addition, there is the potential for the re-sale of recyclables to generate income; and
- THFC are also considering the inclusion of a glass crusher, which would reduce the volume of the waste being removed from the stadium with the potential for the re-sale of crushed glass to generate some income. The option of a food dewatering system is also being explored, this would significantly reduce the weight of the food waste produced.

Figure 20 below outlines the proposed layout of the waste and recycling area.

Figure 20: Waste and recycling area layout



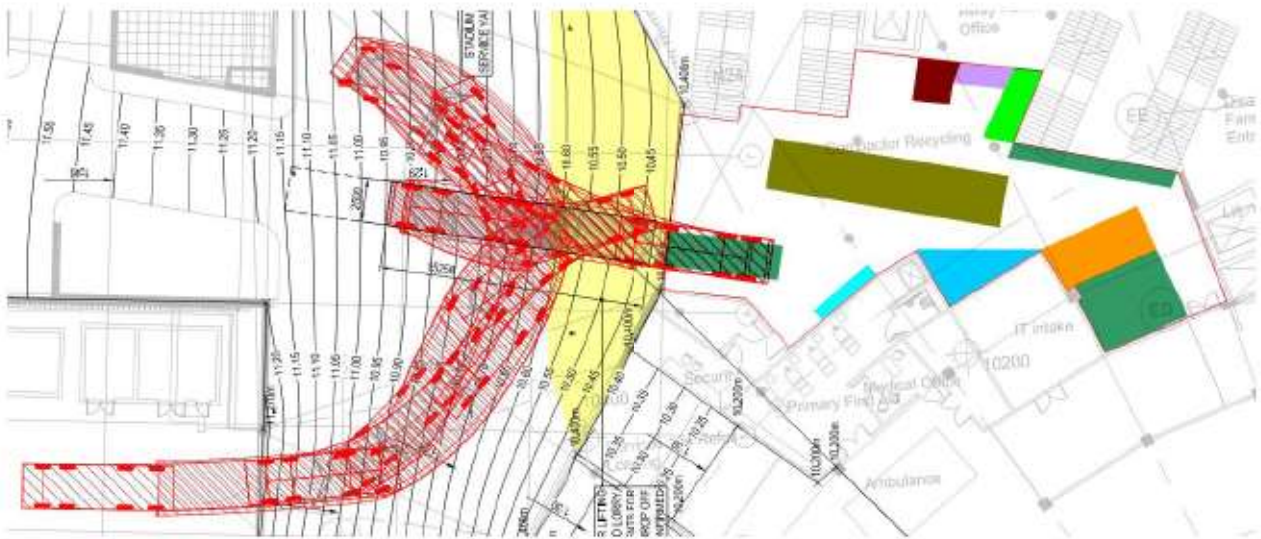
4.2 Waste Collection

Waste will be collected from the northern end of the waste and recycling area in the loading area within the service yard. Each waste stream will be collected on a specific day or at set times depending on the match and event schedule. Baled materials will be lifted using a mini-forklift and taken into the service area. Bins containing glass, organic (food) waste and grass waste will be pulled out into the service yard when the collection vehicle arrives. The residual waste compactor will be lifted out of the service yard and onto the back of the collection vehicle and replaced with an empty compactor.

Analysis of the waste collection operations with the service yard has been undertaken to ensure they do not interfere with goods delivery and other activities taking place, particularly on, immediately before or after a match day.

The tracking detailed in **Figure 21** demonstrates that the collection vehicles will enter via the Sainsbury's service yard, manoeuvre appropriately and collect the compactor and waste as appropriate. A minimum head room of 5.5m has been accommodated to enable the compactor lift.

Figure 21: Refuse collection tracking



All waste collection vehicles will need to report to security and be supervised by a banksman at THFC when collecting waste. WTNs will need to be provided for all collections and kept for a minimum of two years.

5 Conclusions

- Productive and efficient waste management practice is required at the stadium, THFC experience, UTC and public square to ensure waste is managed in a way that maximises venue turnaround times and ensures waste management operations are discreet. The client hopes that the development will be a leading example of excellent waste management within both the sporting and education sector, which achieves a recycling rate of at least 50%, with the aim of improving recycling rates and reducing waste generation each year following opening;
- Outline waste generation calculations estimate that approximately 1,446 tonnes of waste will be produced within the stadium, THFC experience, UTC and public square per year;
- All waste will be collected and transferred to the waste and recycling area at the north-east of the stadium on Level 00 for bulking and removal; and
- Waste will be segregated at source, where practicable into the following three main streams: residual waste, mixed recyclables (glass, paper, cardboard, plastics) and organic waste (food and landscaping waste including grass waste from the pitch). In addition, a number of other waste streams including clinical and hazardous wastes, confidential waste, bulky waste including old furniture and WEEE wastes.

Appendix A – Waste Management Practice and Policy

Information on the relevant national and local waste management practice and policy is provided below. There is a large amount of national policy and guidance however little LBH guidance for commercial waste is available. Existing guidance provides comprehensive and detailed storage and collection requirements for new developments within the borough although the focus is on residential developments. However, the guidance provides direction to ensure good practice and effective and efficient waste management.

National

Government Review of Waste Policy 2011

Prioritises efforts to manage waste in line with the waste hierarchy and reduce the carbon effect of waste. This document also encourages waste prevention and re-use, supporting greater efficiency and initiatives which reward and recognises individuals who reduce, re-use and recycle their waste. It also sets out plans to work with councils to increase the frequency and quality of rubbish collections and make it easier to recycle.

Hazardous Waste (England and Wales) (Amendment) Regulations 2009 SI 507

The Hazardous Waste Regulations, which came into force in 2005 provide requirements for controlling and tracking the movement of hazardous waste and bans mixing different types of hazardous waste.

The Waste Strategy for England 2007 (WS2007)

The Department of Environment Food and Rural Affairs (DEFRA) in 2009 updated the published WS2007. There is a focus primarily on Municipal Solid Waste (MSW), as well as making provision for the future creation of recycling / recovery targets for Commercial & Industrial (C&I) waste.

The Waste (England and Wales) (Amended) Regulations 2012

These regulations came into force 29 March 2011. The regulations implement the revised Waste Framework Directive and require businesses to confirm that they have applied the waste management hierarchy when transferring waste. They introduce a two-tier system for waste carrier and broker registration along with a new concept of waste dealer. They also exclude some categories of waste from waste controls and include a small number of radioactive materials.

Making Space for Waste, A Practical Guide for Developers and Local Authorities, June 2010

This document was designed to allow developers to follow a step by step process when considering the design of waste facilities in new developments.

Material Recovery Facility (MRF) Code of Practice for England and Wales:

The regulations require all permitted MRFs processing more than 1,000 tonnes of dry recyclables per annum to measure and report the quality of the input, output and residual waste streams every three months. This is intended to boost confidence in the quality of material produced at MRFs.

The Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations 2012

Aims to achieve requirements of the EU Directive 94/62/EC (as amended) by setting packaging recycling targets on larger UK business.

Local

The London Plan 2013 (Sustainable Design and Construction Supplementary Planning Guidance April 2014)

Describes an integrated economic, social environmental and transport framework for the development of London over the next 20 to 25 years. The plan sets out to improve the environment and tackle climate change by reducing CO₂ emissions and improving London's recycling performance and waste management. The plan provides updated guidance on designing out waste in buildings during the early stages of a project and on the importance of sufficient and well-designed storage for recyclables, organic and residual waste and the implementation of the waste hierarchy.

The Mayor's Municipal Waste Management Strategy 2011

This document sets out the Mayor's policies and proposals for reducing the amount of municipal waste produced, increasing the amount of waste re-used, recycled or composted, and generating low carbon energy from waste remaining. This strategy also sets out how the Mayor, through the London Waste and Recycling Board, will help develop waste management infrastructure in London. Broadly, the key targets are for zero waste to landfill, a reduction in household waste generation rates of 20%, increased recycling rates to 60% and the generation of energy from waste where appropriate. The Mayor's targets are for London as a whole, placing no specific requirements on individual waste authorities to achieve them.

The Mayor's Business Waste Management Strategy 2011

Sets out initiatives to help London's business (from shops, restaurants, office buildings, manufacturers to construction companies) to save money and reduce harm to the environment through better waste management. Of specific relevance here are the Mayor's proposals to ensure buildings provide suitable storage and access for the management of waste. Additionally, the Mayor will be supporting planning guidance to engage developers, architects and designers in looking for ways to design out waste at source and improve the overall resource efficiency of buildings and infrastructure projects.

London Borough of Haringey (LBH)

Information related to the current waste management practices and policies in LBH has been extracted from the following documents and is summarised below:

- London Borough of Haringey Local Plan;
- London Borough of Haringey Sustainable Design and Construction Supplementary Planning Document (adopted May 2013); and
- North London Joint Waste Strategy.

LBH has strategies in place which seek to deliver more sustainable waste management, namely encouraging waste reduction, maximising re-use and recycling and treating remaining waste as a resource in line with the waste hierarchy.

LBH currently collects mixed recyclables (paper, cardboard, plastic, glass, cans), organics (food and garden waste) and residual waste. Bulky waste collection is also provided. For businesses, commercial collection services of residual waste and dry recycling can be provided. Local planning guidance states that consideration should be given to how the storage and collection of waste and recyclable material can best be incorporated. Commercial waste collection is dependent on waste type and storage capacity. All waste storage areas, internal and external, must be easily accessible to both collectors and occupants. Enough space should be provided on-site to securely and safely store all waste and recycling containers. Space should be provided inside buildings to allow the separation of waste into containers for recyclables, organics and residual waste.

The LBH require all major planning applications within LBH to provide a Site Waste Management Plan (SWMP) with any planning submission. The content of the plan must include full details of the arrangements for the storage and collection of waste for disposal and waste to be recycled. The plan must make reference to the following:

- The number, type and size of receptacles to be dedicated to storage of residual waste and recyclables;
- The positions where receptacles are to be stored between collections;
- The size, design and materials used in construction of any housing built for the storage of receptacles;
- Access arrangements for persons using receptacles showing that consideration has been given to safety, equalities, convenience, user friendliness and maximum walking distances under building regulations; and
- Access arrangements for collection personnel giving consideration to Health and Safety at Work Act, recommended maximum pulling distances for receptacles, vehicle access, height and turning requirements and the construction and width of pathways, doors and access ways.

LBH is working with the North London Boroughs of Hackney, Enfield, Waltham Forest, Barnet, Camden and Islington as part of the North London Waste Plan (NLWP) to achieve 45% recycling and composting standards by 2015 and 50% by 2020 in line with national policy. LBH aim to meet the targets set in the NLWP in a sustainable manner by:

- Promoting the prevention and reduction of waste produced in the borough, increasing the re-use of materials wherever possible, and seeking to increase recycling and composting of waste;
- Ensuring that new development including change of use provides accessible, adequate and well-designed internal and external storage facilities and recycling infrastructure for both residual and recyclable wastes;
- Ensuring that waste is minimised during the design and construction of new developments, encourage the use of sustainably sourced materials and requiring developments to make on-site provision for the recycling and re-use of construction, demolition and operational wastes;
- Ensuring there is sufficient land allocated for waste management purposes and establishing appropriate policies for waste applications to maximise self-sufficiency through the Joint NLWP and applying its policies to waste development. Additionally the council will safeguard existing waste management sites within LBWF; and
- Encouraging waste to be treated as close to the source as possible and encouraging sustainable movement of waste, maximising the potential use of rail and water transport where waste is not treated at its source.

Tottenham Hotspur Football Club Waste Management

Aims and Aspirations

There is no BREEAM target for the scheme. However, meetings with the client, design team and THFC staff and contractors involved in cleaning and waste management were held (1st October and 6th November 2014 and 12th February 2015) to discuss the preliminary waste management aims and aspirations for the development. The client recognises that in order for the venue to operate in a productive and efficient manner good waste management is required. The client wants to ensure safe operational practice and efficiency within the development. The following aims, aspirations and general principles have been agreed with THFC:

- Develop productive and efficient waste management practice to ensure the new THFC stadium and associated facilities are a leading example of excellent waste management within the sporting sector;
- Keep back of house areas and public realm areas segregated in terms of waste as far as possible to ensure waste management operations are discreet;
- Ensure waste is managed in a way that maximises venue turnaround times;
- Achieve a recycling rate of at least 50% with zero waste to landfill;
- Assess opportunities for packaging reductions, re-use or recovery, but in a manner that does not negate need to reduce waste volumes. Where possible packaging should be returned to the supplier for re-use;
- Aim to reduce the existing waste generation rate per fan by at least 25%. The aim is to reduce the waste generation rate which is currently 0.546kg per fan per game to 0.4095 kg per fan per game;
- Employ a private waste management contractor capable of weighing all waste collected from the stadium to ensure that records of the tonnages of the individual waste streams are maintained; and
- Undertake an annual waste audit to track the quantities of residual waste, organics and recyclables that are produced. This will enable THFC to monitor their performance against their targets.

THFC Policy and Guidance Documents

THFC is committed to manage its waste in line with the waste hierarchy, as shown in **Figure 1**, and other relevant national and local legislation and guidance. THFC have produced the following waste management policy and guidance documents to ensure that all waste generated within the stadium is disposed of safely and efficiently to ensure good waste management.

These documents will be updated as the design for the new THFC stadium and associated facilities progresses. A brief summary of the key objectives and principles outlined in each of these documents is provided below.

THFC Waste Management Policy (dated January 2015)

- As a minimum, the collection of the following key waste streams should take place: residual waste, mixed recyclables (glass, paper and cardboard and plastics) and organics (food and landscaping waste);
- Provision for other specialist wastes including hazardous wastes (i.e. paints, chemicals, pesticides, medical / clinical wastes), confidential waste, bulk wastes and Waste Electrical and Electronic Equipment (WEEE) should be made;

- Provide designated waste receptacles throughout the stadium to encourage waste segregation at source as far as practicable (i.e. in offices, hospitality and food outlets, kitchens, general concourse areas, player and media facilities and the THFC experience). All waste receptacles must be clearly marked;
- Minimise waste production and increase re-use and recycling in line with the waste hierarchy;
- Waste will be collected at regular intervals and where possible, waste will be processed on site prior to collection (i.e. compacting and baling of recyclables) to reduce the volume of waste generated;
- Establish ambitious waste and recycling targets (these have not yet been finalised by THFC) and undertake a waste audit on an annual basis;
- Raise awareness of waste management issues by offering waste management training to all staff; and
- It will be the overall responsibility of the Operations Director to ensure that waste is managed successfully throughout the stadium.

THFC Employer's Requirements (dated August 2014)

- Waste receptacles are to be located adjacent to catering units at lower concourse level only (Level 1) and be sufficient size to contain two 1100 litre wheeled bins;
- Waste is to be cleared immediately after half time and at full time to waste rooms and held temporarily at the main concourse levels (Levels 1 and 5) and transported to the waste and recycling area by lift;
- A minimum of 15m² of waste store space on each general admission level should be allocated. Bagged waste may be stored on the floors and wash down facilities are required. Provision for charging of electric vehicles (EVs) may be required;
- Waste produced in food outlets within the general concourse and hospitality areas will be stored until after the event. It will then be removed to the waste area by lift. All rubbish will be segregated prior to being removed; and
- The requirements for a compactor area will be a minimum of 180m². This must accommodate at least two compactors and skips (for residual and recyclable wastes) with an associated wash down area. A minimum of 5.5m of headroom should be allocated.

Appendix B - Emirates Stadium Precedent Study Findings

A precedent study on the nature and characteristics of the waste management operations taking place at the Emirates Football Stadium (the home of Arsenal Football Club) has been undertaken by BuroHappold. The Emirates Stadium was selected as it is a Premier League Football Stadium within the London area with a similar capacity to that of the new THFC stadium. The aim of this study was to try and identify the key issues that the FM teams working within this venue are facing and how this is affecting the efficiency of waste management operations on a day to day basis. Visits to Arsenal's Emirates Stadium were undertaken on 29th October 2014 and 12th January 2015 with the Deputy Stadium Manager, Michael Lloyd. The findings of the visits are summarised below:

Summary of Main Issues

- No dedicated service lifts for goods and waste and there is a lack of space for bins and bale storage on the ground floor within the dedicated waste area;
- No intermediate storage in food and beverage units and no of intermediate storage on each floor;
- Time cost to separate waste by hand, this is a very labour intensive process but has proved to be the most effective way of improving recycling rates at the stadium;
- Cost of waste removal (per tonne and transport costs) and capital expensive of waste equipment and technology;
- Getting contractors and fans to 'buy-in' and adopt the waste initiatives and improve recycling rates. It is hard to change the habits of fans;
- Getting to 'buy-in' and support from senior management on waste issues due to budget limitations. However, for the current season (2014/2015) money has now been allocated to support sustainability issues with energy reduction being the main focus; and
- Finding suitable recycling technology and options including hot and cold cups, food packaging, wanting different colour plastic separated etc. has proved problematic.

Key Observations

- The following main waste streams are segregated: residual waste, recyclables (paper, cardboard, plastic, metal, glass), grass, bulky wastes, hazardous waste and other streams including wood and electrical items;
- The stadium recycled 78% of its waste during the 2012 / 2013 football season;
- All waste, goods, general admission, disabled and corporate fans use the same lifts to move vertically around the stadium. This causes a number of issues on match days;
- It takes the FM team approximately 4 hours following a game to sort the waste into recyclables and non-recyclables once all waste has been transferred to the ground floor. Current waste management operations are heavily reliant on the FM team and are not very efficient with high staff costs;
- There is insufficient space for the storage of waste receptacles within the kitchen areas and insufficient intermediate storage is allocated on each level of the stadium. The spaces allocated are not enclosed and are located within the public realm adjacent to lifts and stairwells;

- Bins are located throughout corporate and general admission areas and waste is segregated at source although all waste is then mixed as it passes down the waste chute and is sorted by hand within the waste and recycling area;
- The waste chute often blocks with staff putting unsuitable materials into the system;
- Food waste is not segregated and is removed with residual waste. Grass is currently removed as residual waste;
- Plastic and cardboard are baled at the site using a large baler and sold (approximately 10 tonnes a month);
- Glass bottles and beer on tap used in both general admission and hospitality areas;
- Large areas of the ground floor are occupied by rows of bins and waste facilities. Large areas of the car park under the podium have been consumed by waste management operations;
- Use of hand driers instead of paper towels; and
- Use of compostable packaging was explored but this was considered to be too expensive for use.

Mini-Material Recovery Facility (MRF)

There is consideration towards the use of a mini-Material Recovery style facility (MRF). The aim of this is to gain full value for the recyclable waste content as waste is not currently separated well by fans in the general concourse, stands and hospitality areas so a MRF should make that quicker and easier. Currently the stadium's waste contractor extracts all the recyclables sells them independently. The stadium is keen to recover some of this cost for itself. It is hoped that the use of a MRF will allow better control of the waste and allow more options to recycle. It is hoped that this will also reduce costs as less waste will be removed from the site.

Arsenal trialled a mini-MRF system, provided by Portable Conveyers Ltd. for January to early February 2015. The system comprised a conveyer belt operated by five FM staff, one placing all the bagged waste onto the conveyer belt and moving bins once full, one opening the bags and three picking out the different types of waste from the conveyer belt. Typically following each game, it took one and a half days for all of the waste to be processed through the mini-MRF. Typically four tonnes of recyclables were recovered per game and re-sale costs were approximately £250 per half tonne bale for clear plastic and £30-£40 per half tonne bale for cardboard and disposable cups.

Typical waste and recycling figures following the use of the mini-MRF were as follows:

- 1 x pallet of clear plastic bottles and 1 x pallet of green plastic bottles;
- 1 x pallet of disposal cups;
- 33 x 240 litre bins of glass bottles;
- 1 x 240 litre bin of aluminium cans; and
- 3 tonnes of food waste and approximately 2.5 to 3 tonnes of general waste.

The reduction in general waste produced per game meant that the general waste compactor at the stadium had to be emptied 50% less than normal, resulting in waste management contractor fees for collection being reduced. A detailed assessment of the waste data and comparative study is yet to be undertaken.

The likely cost of the mini-MRF are likely to be in the region of £22,000 plus the cost of addition FM staff to operate the system. However, Arsenal are exploring this option as they think it will be economically viable as the amount of waste collected and requiring disposal will be reduced and there is the potential for considerable income from the re-sale of collected recyclables.

In addition, Arsenal are also aiming to send all grass waste to an Anaerobic Digestion (AD) facility for energy from waste processing from early 2015.

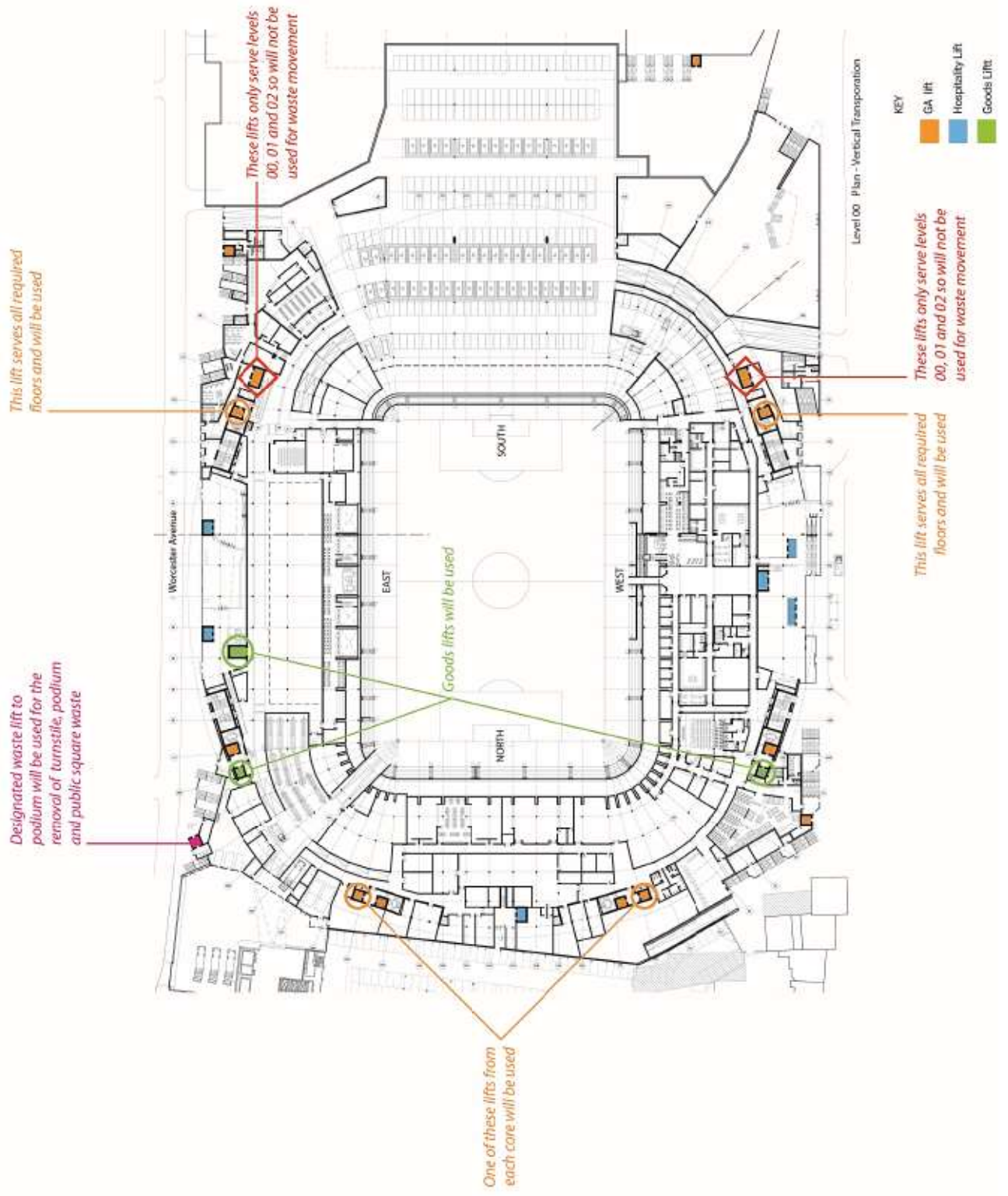
Appendix C Initiatives to Reduce Waste

It is recommended that the following initiatives are considered by THFC to reduce the amount of waste and improve recycling and re-use within the stadium and associated facilities. If these initiatives are adopted, it is essential that spatial provision is allocated:

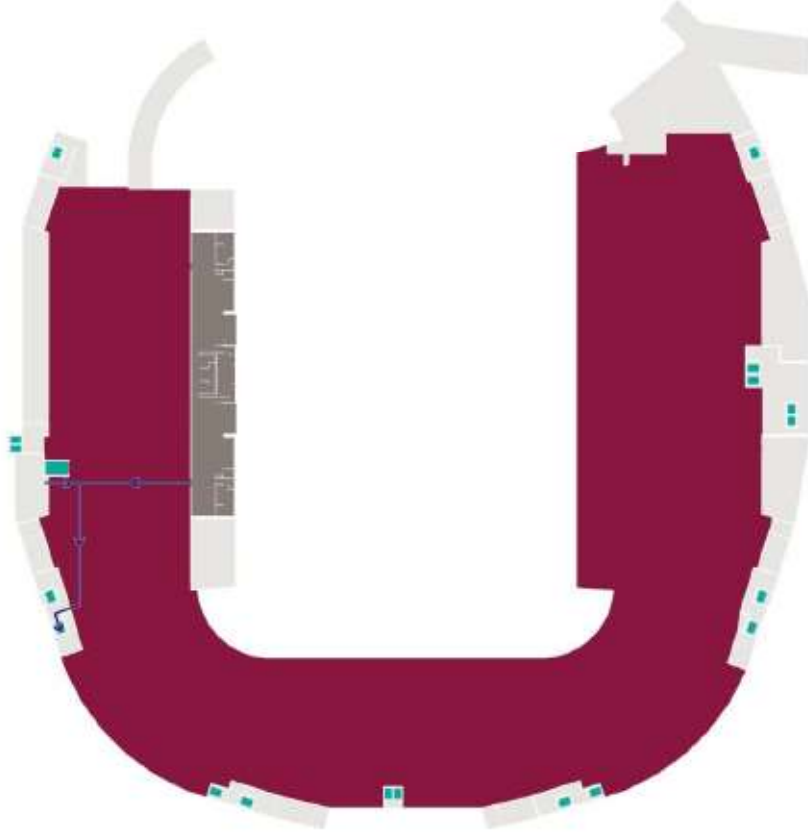
Type	Option
Sustainable Catering Alternatives	
Reduce	Promote the serving of beer on tap to reduce the plastic and glass produced
Reduce	Do not serve drinks in tins and aluminium cans to eliminate metal as a waste stream
Reduce	Use of glasses to serve drinks instead of disposable cups, particularly in hospitality areas
Reduce	Minimise packaging of products and encourage the backhauling and re-use of packaging
Reduce	Consider the use of compostable packaging for crisps, chocolate, drinks and other snacks
Reduce	Use an inventory system to provide control over supplies to avoid over-ordering and waste
Reduce	Use of part-prepared food (i.e. peeled vegetables, de-boned meat etc.) and freezing of food
Reduce	Review of portion sizes to ensure only as much food as is needed is prepared and cooked
Reduce	Use of cutlery, china and glass as oppose to disposable crockery and cutlery
Reduce	Inform staff that they are to hand out straws, lids, and napkins only when requested
Reduce	All condiments should be dispensed from bulk containers rather than single-serve packets
Reduce	Consider purchasing beverage mixes in concentrated form
Reduce	Use of individually dispensed, unwrapped plastic utensils, biodegradable utensils, or none at all
Recycle	Use of locally sourced food and drink and donate surplus food to local food banks (if edible)
Recycle	Streamline drinks sales, ideally to the complete use of plastic bottles as oppose to glass
Recycle	Streamline food packaging, ideally to the same material (cardboard or plastic) to make it easier to achieve high quality recycled materials
Other Alternatives	
Reduce	Utilising washable cloth towels instead of paper towels to clean up behind the counters
Reduce	Use of hand dryers instead of paper towels
Reduce	Minimise paper-based marketing and circulate by email and buying recycled content supplies
Recycle	Bins at ticket turnstiles to encourage disposal prior to entering i.e. cans, half eaten food etc.
Recycle	Sell or give old equipment and furniture to local businesses, charity or educational projects
Recycle	Recycling printer cartridges
Recycle	Interactive signage presenting information showing where waste and recyclables collected from the stadium go and what happens after collection. Recycling figures could also be presented
Recycle	Details on how fans can recycle could be provided to all season ticket holders in their welcome pack
Recycle	Signs on the turnstiles, back of toilet doors, within the concourses and food outlets could promote recycling. In addition, recycling information could be displayed on all match day tickets and within the club programme or over the loudspeakers
Recycle	An education programme with local schools and local councils to raise awareness, particularly the younger generation about the importance of recycling and how this works within the stadium could be undertaken
Recycle	Colour coding packaging labels to the appropriate bins i.e. black label on item bought indicates residual waste to be placed in the black bin and green label on packaging to be placed in green bin etc.
Recycle	A recycling mascot for the club targeting children who are the fans of the future
Use of Technology	
Reduce	Consider the use of a dewatering system to reduce the volume of food waste

Type	Option
Recycle	A glass crusher could be purchased. This would require clear and coloured glass to be separated and then crushed outside of operating hours to avoid noise disturbing games and other events
Recycle	Consideration to the use of a plastic shredder to reduce the volume of waste storage (storing bottles takes up a large amount of space due to the volume of air contained within each bottle) could be given
Recycle	Flatten and bale cardboard generated from packaging to reduce bulk using a baler
Recycle	Bale plastic generated from general concourse areas using a baler
Recycle	Install a mini-Materials Recovery Facility (MRF) on site to improve the quantity and quality of recyclables

Appendix D – Use of Lifts for the Movement of Waste

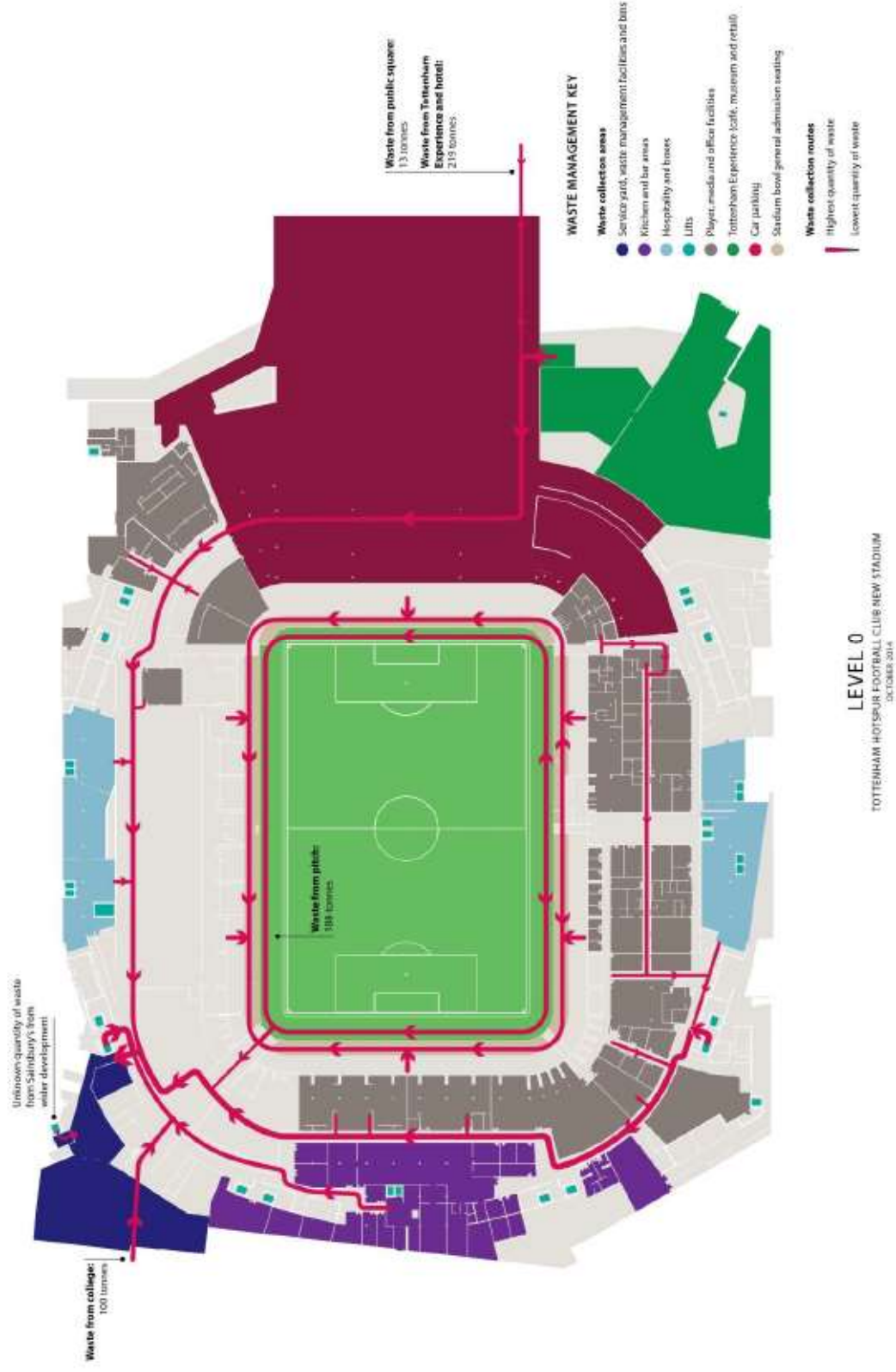


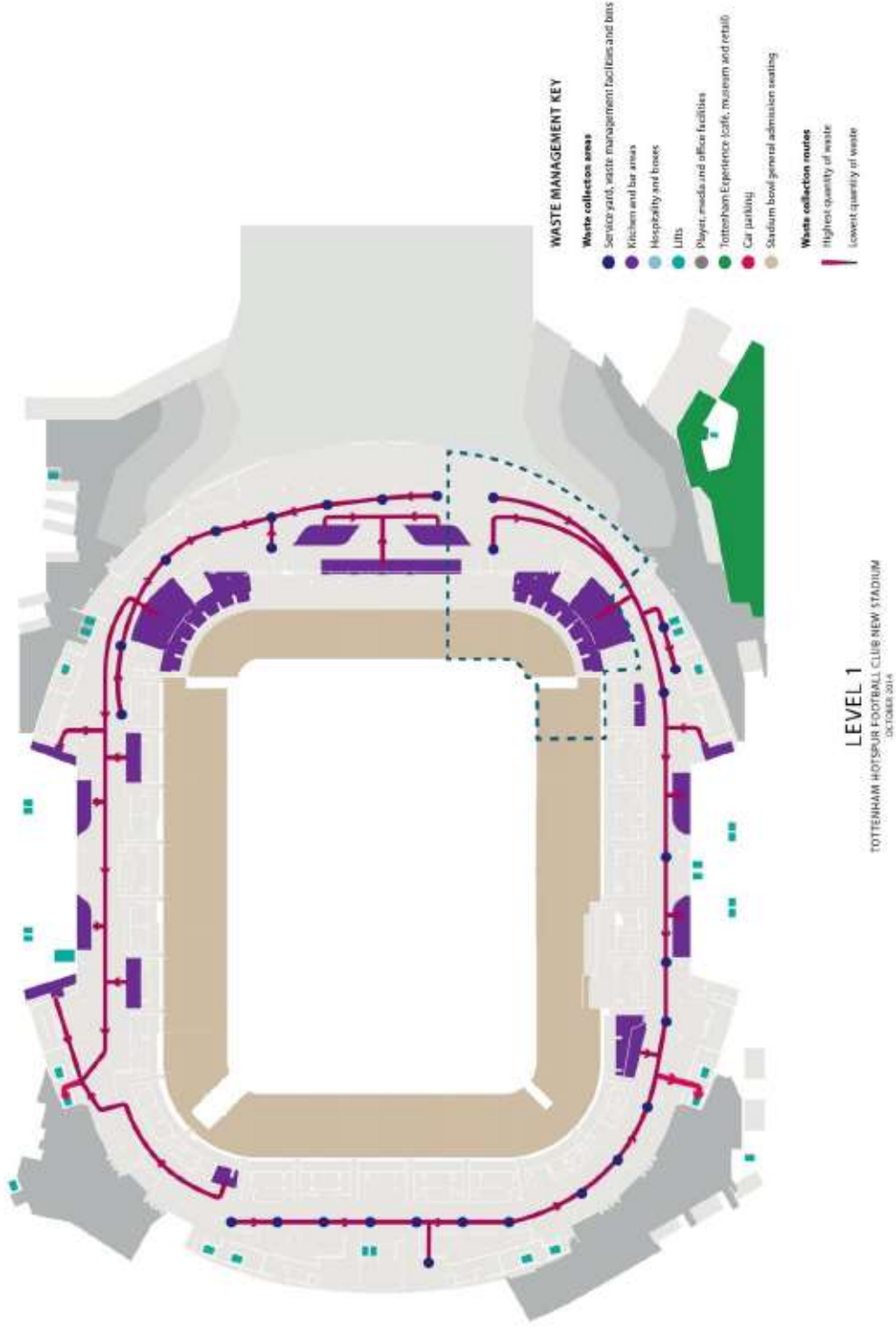
Appendix E Waste Flow Route Analysis

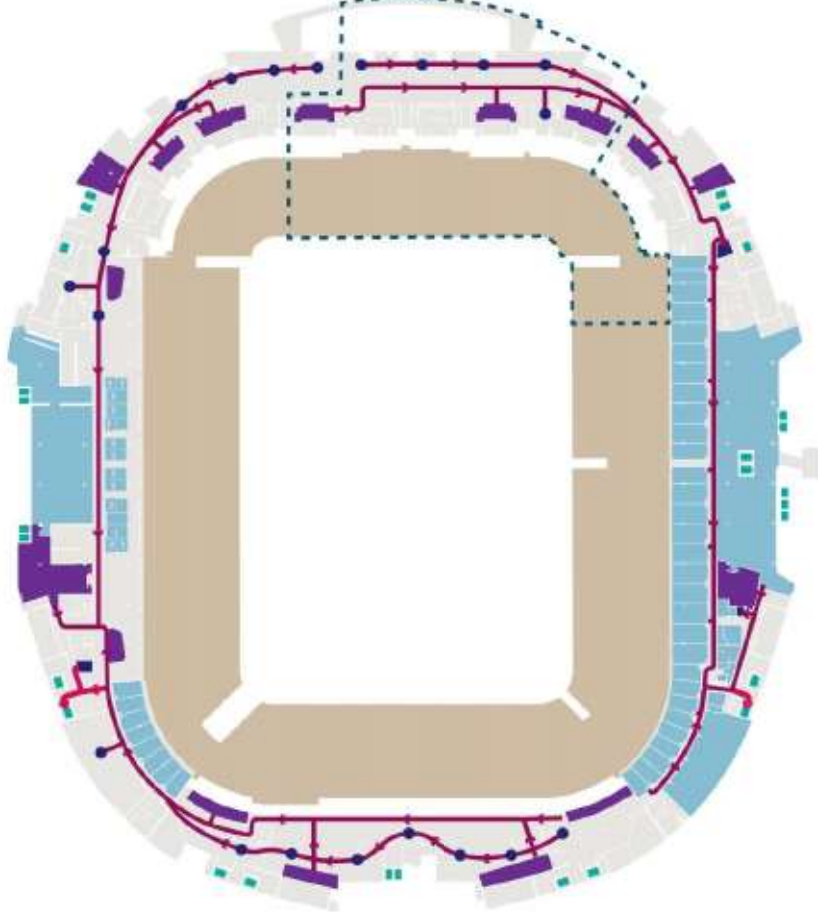


LEVEL B1
TOTTENHAM HOTSPUR FOOTBALL CLUB NEW STADIUM
OCTOBER 2014

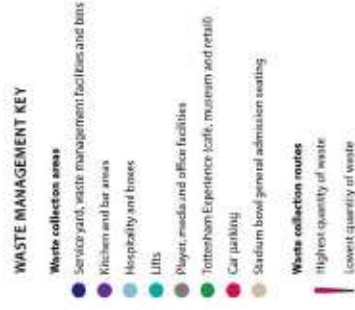
- WASTE MANAGEMENT KEY**
- Waste collection areas**
- Service yard, waste management facilities and bins
 - Kitchens and bar areas
 - Hospitality and boxes
 - Lifts
 - Payers, media and office facilities
 - Tottenham Experience (cafe, museum and retail)
 - Car parking
 - Stadium bowl general admission seating
- Waste collection routes**
- Highest quantity of waste
 - Lowest quantity of waste

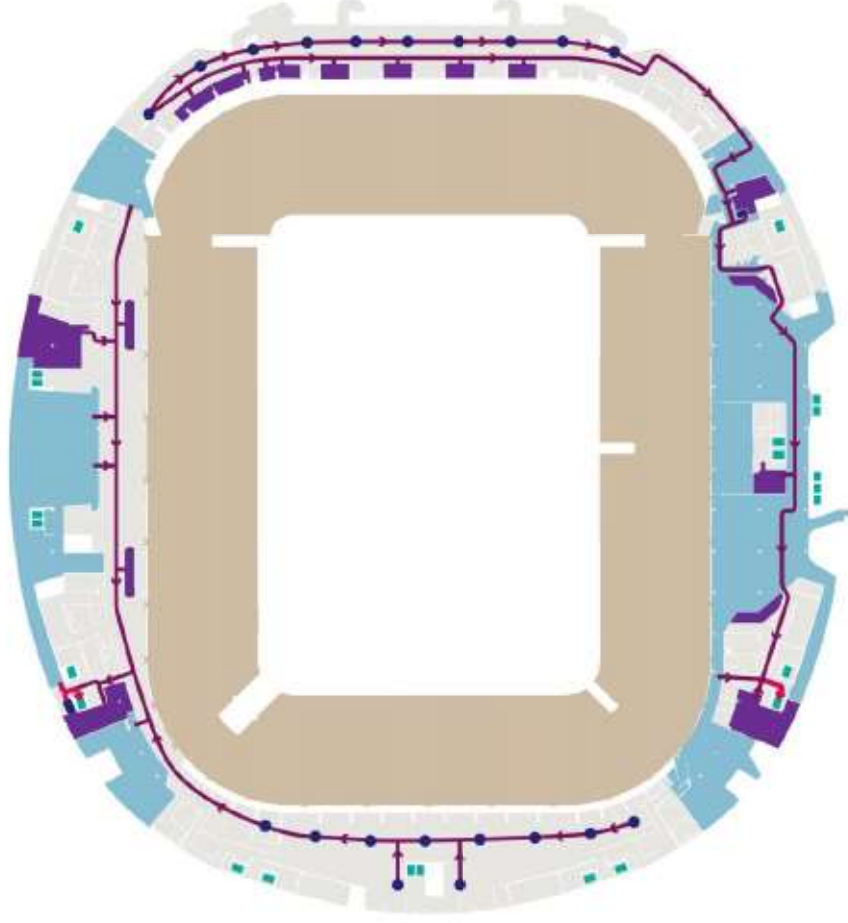






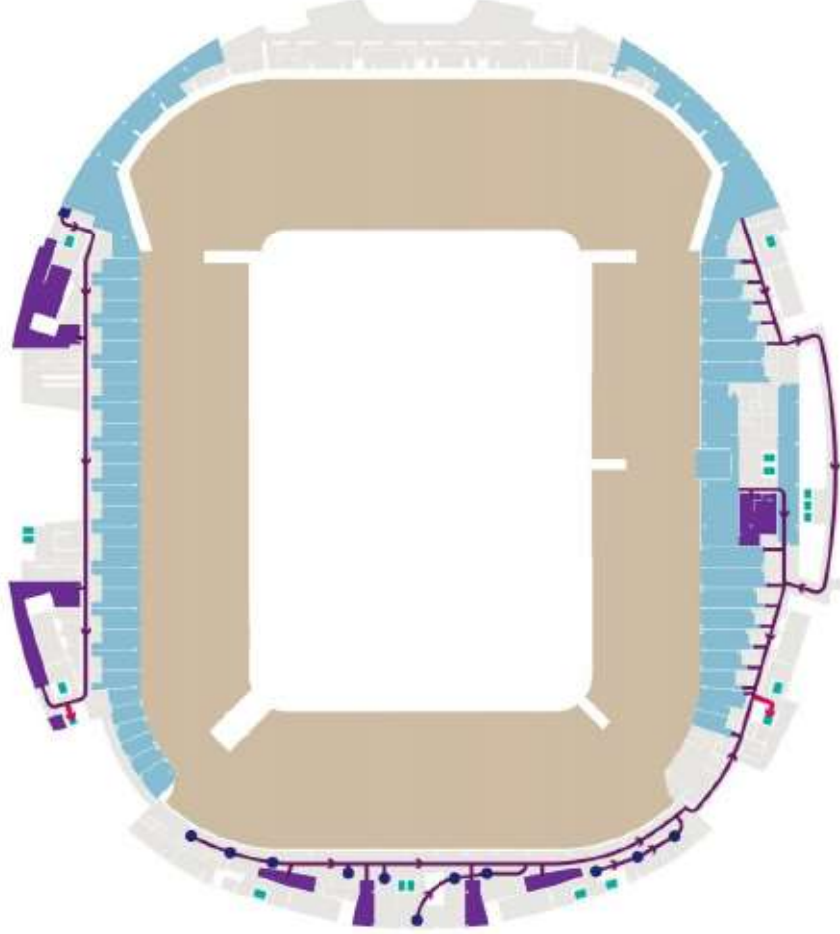
LEVEL 2
TOTTENHAM HOTSPUR FOOTBALL CLUB NEW STADIUM
OCTOBER 2014





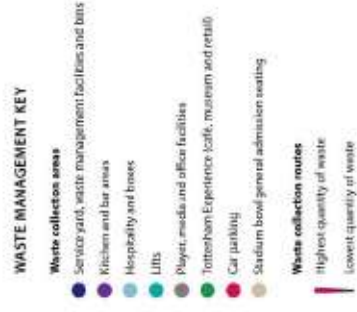
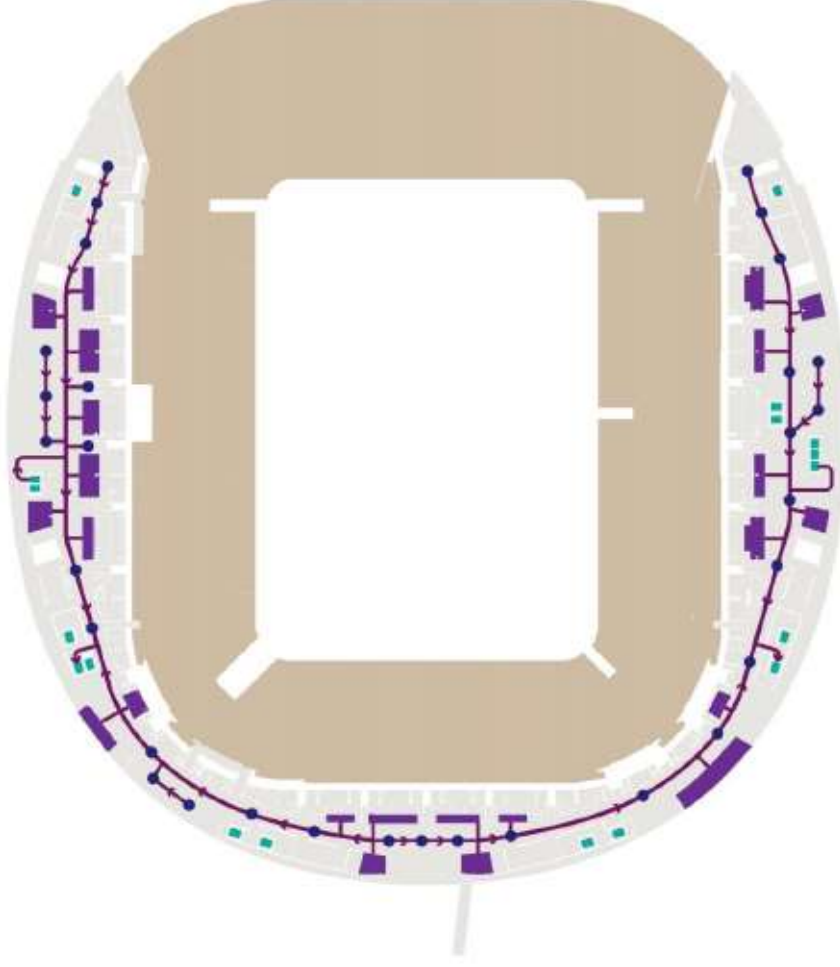
LEVEL 3
TOTTENHAM HOTSPUR FOOTBALL CLUB NEW STADIUM
OCTOBER 2014



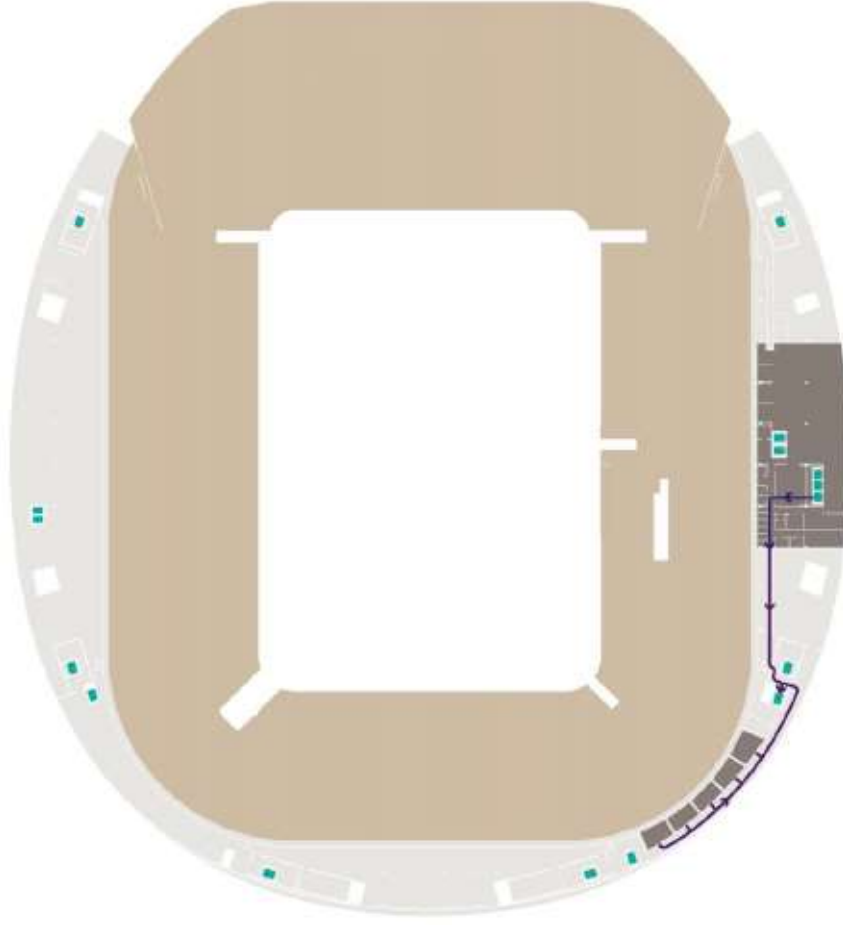


LEVEL 4
TOTTENHAM HOTSPUR FOOTBALL CLUB NEW STADIUM
OCTOBER 2014

- WASTE MANAGEMENT KEY**
- Waste collection areas**
- Service yard, waste management facilities and bins
 - Kitchen and bar areas
 - Hospitality and boxes
 - Lifts
 - Player, media and office facilities
 - Tottenham Experience (cafe, museum and retail)
 - Car parking
 - Stadium bowl general admission seating
- Waste collection routes**
- Highest quantity of waste
 - Lowest quantity of waste

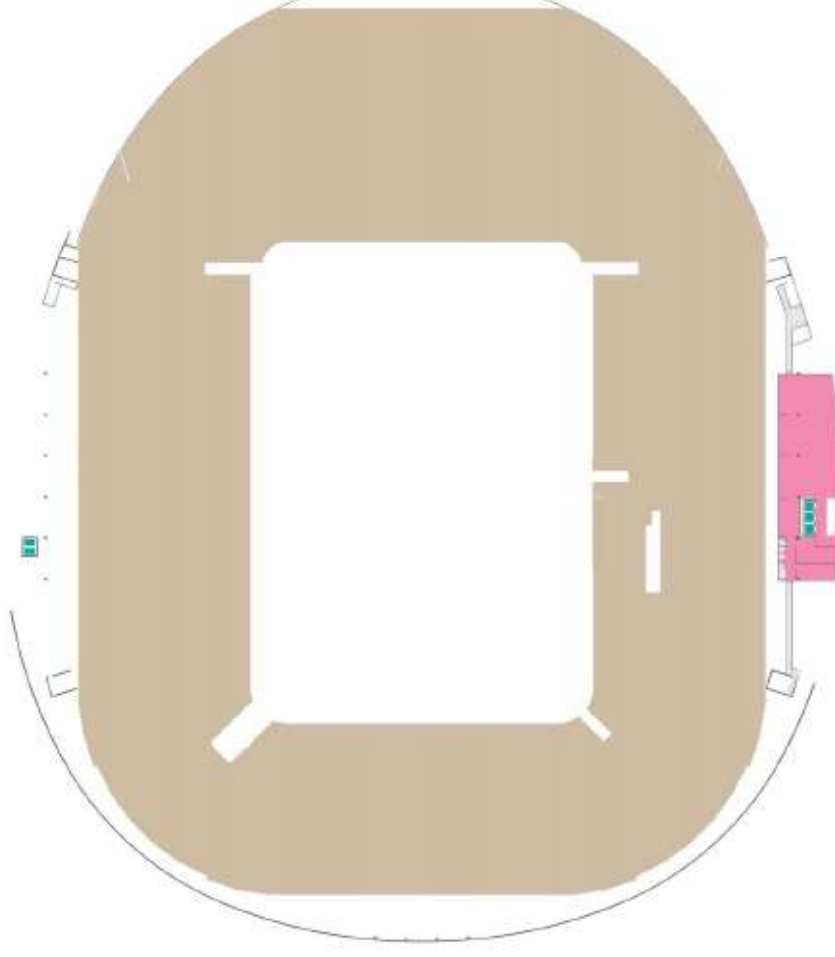


LEVEL 5
TOTTENHAM HOTSPUR FOOTBALL CLUB NEW STADIUM
OCTOBER 2014



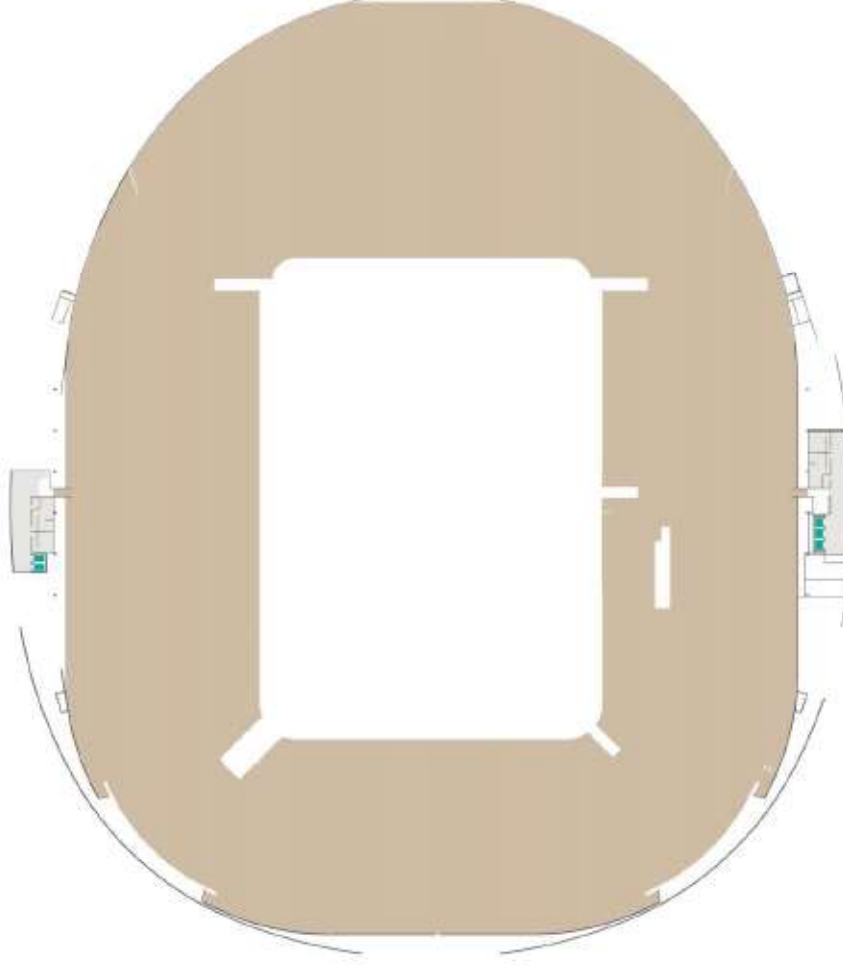
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TOTTENHAM HOTSPUR FOOTBALL CLUB NEW STADIUM
OCTOBER 2014

- WASTE MANAGEMENT KEY**
- Waste collection areas**
- Service yard, waste management facilities and bins
 - Kitchen and bar areas
 - Hospitality and boxes
 - Lifts
 - Player, media and office facilities
 - Tottenham Experience (cafe, museum and retail)
 - Car parking
 - Stadium bowl general admission seating
- Waste collection routes**
- Highest quantity of waste
 - Lowest quantity of waste



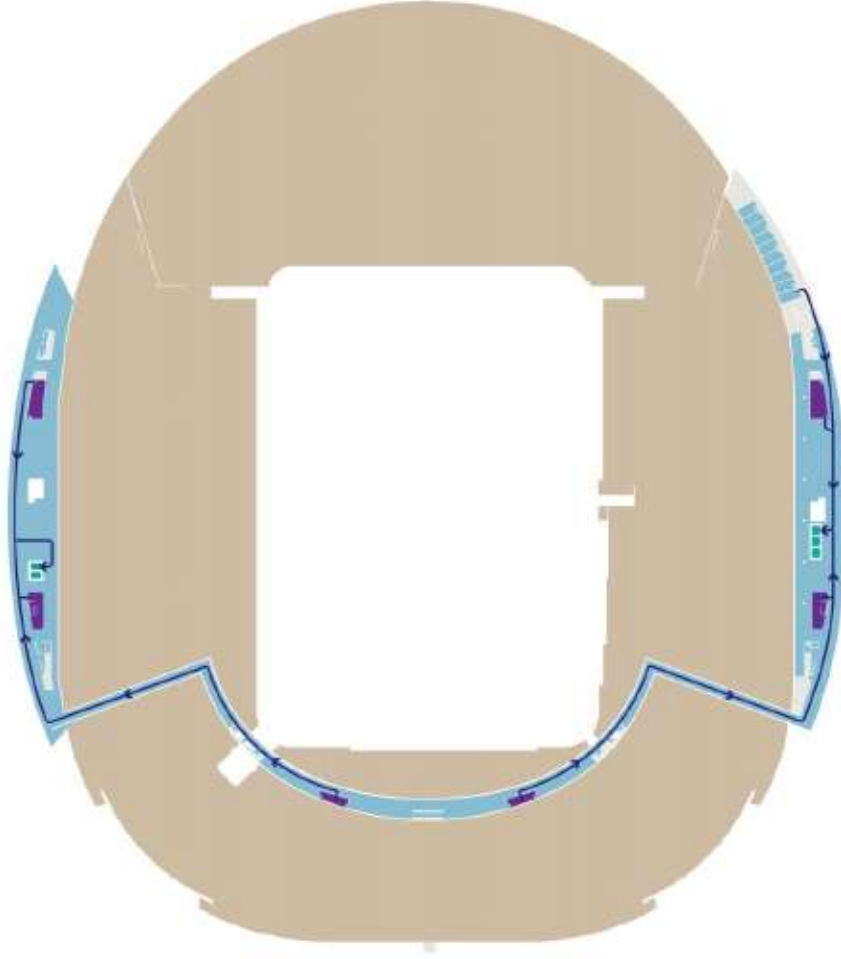
LEVEL 7
TOTTENHAM HOTSPUR FOOTBALL CLUB NEW STADIUM
OCTOBER 2014





LEVEL 8
TOTTENHAM HOTSPUR FOOTBALL CLUB NEW STADIUM
OCTOBER 2014

- WASTE MANAGEMENT KEY**
- Waste collection areas
 - Waste management facilities
 - Service yard, waste management facilities and bins
 - Kitchen and bar areas
 - Public areas
 - Waste management facilities
 - Hospitality and boxes
 - Lifts
 - Press media and office facilities
 - Waste management facilities
 - Tottenham Experience (club, museum and retail)
 - Tottenham Experience (club, museum and retail)
 - Car parking
 - Stadium bowl general admission seating
 - Stadium bowl general admission seating
 - Waste collection routes
 - High capacity aggregate
 - Lowest quantity of waste



Appendix F Waste Design Note 4

Design Note 4

Project THFC Stadium
Subject Spatial requirements update and strategy
Project no 031627
Date 5 August 2015

Revision	Description	Issued by	Date	Approved (signature)
01	Waste store spatial requirements update and strategy	Fergus Anderson	05.08.15	James Hobson

1. Introduction

The purpose of this document is to provide an update on the recommended spatial requirements for internal waste stores in the THFC Stadium development. The analysis presented in **Table 1** is based on the following data and assumptions:

- Occupancy figures for stand and concourse areas only based on the updated figures provided by Populous on 27.07.15;
- A waste generation rate per fan per game of 0.2498 kg, this was determined from a best practice analysis at Wembley stadium; and
- Bin sizes as follows
 - 240L (for organic waste) : footprint of 0.92m² including 150mm per side as require to facilitate movement
 - 1100L (for mixed recyclables and residual waste) : footprint of 2.27m² including 150mm per side as require to facilitate movement

Levels 06, 07 and 08 have been excluded as these are primarily office areas and it is assumed these will be managed as outlined within the Operational Waste Management Strategy (OWMS) for the development. Office areas as well as media facilities, kitchens and so forth have further been excluded from the calculations below. It is assumed these areas will be managed as outlined within the OWMS for the development.

A comparison of space required (for the temporary storage of waste) and the space currently provided on plans has been made. Results are shown in **Table 1**. Where a spatial requirement is significantly greater than that planned, the figure is highlighted in red thus posing a significant risk to future operations. A series of options have been outlined in section 2.1 to overcome this. A further series of options for those areas where spatial requirements are not met by provided space but lower risk is associated (highlighted in amber) have been provided. All other areas are deemed to be adequately serviced in terms of waste management. It is intended that Populous and the team agree on a suitable option for those areas where risk is presented to enable effective waste management.

Table 1: Spatial requirement calculations

Land Use	Occupancy	Waste Generation Rate/fan/game (kg)	Kg per game	Compositional breakdown			Waste generation (kg/game)			Bin numbers per game			Spatial requirement (m2)			Total floor area required (m2)	Provided (m2)
				Mixed recyclables	Organics	Residual	Mixed recyclables	Organics	Residual	Mixed recyclables	Organics	Residual	Mixed recyclables	Organics	Residual		
Level One																	
West concourse	7607	0.2	1900	50%	25%	25%	950	475	475	15.8	5.7	4.8	36.01	5.27	10.80	52.08	59.4
Food court	3000	0.2	749	50%	25%	25%	375	187	187	6.2	2.3	1.9	14.20	2.08	4.26	20.54	32
East concourse	2858	0.2	714	50%	25%	25%	357	178	178	5.9	2.2	1.8	13.53	1.98	4.06	19.57	38.3
Away fans	2877	0.2	719	50%	25%	25%	359	180	180	6.0	2.2	1.8	13.62	1.99	4.09	19.70	14.5
Level Two																	
Away fans	143	0.2	35.7	50%	25%	25%	18	9	9	0.3	0.1	0.1	0.68	0.10	0.20	0.98	0
North stand	133	0.2	33.2	50%	25%	25%	17	8	8	0.3	0.1	0.1	0.63	0.09	0.19	0.91	0
South stand	10544	0.2	2,633.9	50%	25%	25%	1317	658	658	21.9	7.9	6.6	49.92	7.30	14.97	72.19	9.6
Level Three																	
South stand concourse	3668	0.2	916.3	50%	25%	25%	458	229	229	7.6	2.8	2.3	17.36	2.54	5.21	25.11	12.6

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Land Use	Occupancy	Waste Generation Rate/fan/game (kg)	Kg per game	Compositional breakdown			Waste generation (kg/game)			Bin numbers per game			Spatial requirement (m2)			Total floor area required (m2)	Provided (m2)
				Mixed recyclables	Organics	Residual	Mixed recyclables	Organics	Residual	Mixed recyclables	Organics	Residual	Mixed recyclables	Organics	Residual		
Level Four																	
North concourse (1)	1801	0.2	449.9	50%	25%	25%	225	112	112	3.7	1.4	1.1	8.53	1.25	2.56	12.33	10.3
North concourse (2)	1801	0.2	449.9	50%	25%	25%	225	112	112	3.7	1.4	1.1	8.53	1.25	2.56	12.33	10.3
South stand	2760	0.2	689.4	50%	25%	25%	345	172	172	5.7	2.1	1.7	13.07	1.91	3.92	18.90	12.6
Level Five																	
East concourse	6698	0.2	1,673.2	50%	25%	25%	837	418	418	13.9	5.0	4.2	31.71	4.64	9.51	45.86	17.5
North concourse	6104	0.2	1,524.8	50%	25%	25%	762	381	381	12.7	4.6	3.8	28.90	4.23	8.67	41.79	16.6
West concourse	6252	0.2	1,561.7	50%	25%	25%	781	390	390	13.0	4.7	3.9	29.60	4.33	8.88	42.81	17.5
Level Nine																	
Sky lounge west	350	0.2	87.4	50%	25%	25%	44	22	22	0.7	0.3	0.2	1.66	0.24	0.50	2.40	3.5
Sky lounge east	350	0.2	87.4	50%	25%	25%	44	22	22	0.7	0.3	0.2	1.66	0.24	0.50	2.40	3.5
Sky bridge (north)	120	0.2	30.0	50%	25%	25%	15	7	7	0.2	0.1	0.1	0.57	0.08	0.17	0.82	0

2 Options for Risk Mitigation

2.1 High Risk

Level Two – South Stand

Primary issue has arisen due to lack of intermediate storage areas provided, the consequence of which is that the waste generated within the South stand on Level 02 cannot be held within the stand for the entirety of the match. This means that the area will likely become heavily littered and in need of frequent servicing during game play (i.e. after kick off and half time, in addition to when fans have left). This will increase operational cost, disrupt operations and potential add to BOH congestion.

A major challenge is the fact that the South stand is located between corporate areas East and West, as such waste cannot be moved to service lifts without moving them through these areas which may detract from fan experience.

Option One

Waste is disposed of within bins in the stand and on shelves provided. Waste will be collected manually and transported to the service area on Level 00 during match play. Servicing the area at this frequency and transferring waste directly to the waste store will bypass the need for intermediate storage. If waste is not to pass through corporate areas this strategy will however necessitate that passenger lifts are used for waste transfer to Level 00.

All bins required to service the space (36 in total) will have to be stored in excess space at Level 01 and transported up via the passenger lifts.

Option Two

Provide additional storage capacity within the South Stand to accommodate anticipated waste volumes outlined in Table 1.

Level Four – South Stand

Whilst the difference between required space and provided space is not as great as at Level 02, the South Stand at Level 04 has been highlighted as a high risk again as this is isolated between corporate areas East and West. As the amount of waste which is

anticipated to be generated in the area cannot be held in the South Stand for the entirety of the match, it must either be contained elsewhere or be serviced during match play.

Option One

Provision of additional storage capacity within the Stand, this could be bins located in the concourse which are equivalent to the short fall identified in Table 1 for example.

Option Two

Servicing the bins during match play as per Option for the South Stand at Level 04.

2.2 Medium Risk

Level Two – Away Fans & North Stand

Primary issue has arisen due to lack of intermediate storage areas provided. As this is minimal this could be made up through the placement of bins throughout the concourse area. No major risk anticipated.

Level Three – South Stand

Primary issue has arisen due to lack of intermediate storage areas provided. Additional servicing will be required, suitable route to service lifts should be available to achieve this.

Level Five – North, East and West Concourses

Primary issue has arisen due to lack of intermediate storage areas provided. Additional servicing will be required, suitable route to service lifts should be available to achieve this.

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Tottenham Hotspur Football Club

Hotel Waste Strategy

031627

12 August 2015

Revision 00

Revision	Description	Issued by	Date	Checked
00	THFC Hotel operation waste management strategy	Fergus Anderson	24.07.15	James Hobson

\\srv-edn01\Non-Project\I&E\1 Waste Management\Resource Management\3 Projects1\UK projects\151001 THFC Residential and Hotel Development\Hotel\Populous design\Reports\150812 FA 031627 THFC Hotel Waste Strategy 00.docx

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author **Fergus Anderson**

date **12.08.15**

approved **James Hobson**

signature

date

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2.2	Outline Bin Numbers	11
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3.1	Waste segregation	12
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	Appendix B Hotel Initiatives to Reduce Waste	

Glossary

Term	Definition
EV	Electric Vehicles
FM	Facilities Management
OWMS	Operational Waste Management Strategy
THFC	Tottenham Hotspur Football Club

1 Introduction

An Outline Operational Waste Management Strategy (OWMS) is required to support the outline planning application for the Tottenham Hotspur Football Club (THFC) Hotel located in Tottenham, North London. The hotel is located in the South West of the wider THFC Masterplan which includes the stadium, THFC experience, southern residential development and a public square (which will contain spectator screens for members of the public to watch events taking place within the stadium). The hotel is planned to contain a mixture of hotel guest rooms and serviced apartments.

This document forms the OWMS for the THFC hotel only and covers how waste within the development will be managed. A separate OWMS has been prepared for the stadium, THFC experience, public square and southern residential. The planning application for the hotel is due to be submitted to the London Borough of Haringey (LBH) in August 2015.

The management of solid waste is an important element to consider as buildings are designed. Planning for future operational waste management ensures that a building will be able to operate efficiently and sustainably while minimising the impacts on the designed requirements building performance and site users. Good waste management will be essential ensure safe operational practice throughout the development. The waste management strategy must ensure that the hotels Facilities Management (FM) teams can collect, store, recycle, re-use and dispose of waste quickly and efficiently and in a discreet manner in line with THFC Waste Management Policy and the waste hierarchy as shown in **Figure 1**. Waste management operations will need to be hidden from visitors and residents to ensure that they do not interfere with the day to day operations within the residential towers.

Figure 1: The Waste Hierarchy



- 01** Minimise the amount of waste produced and avoid producing waste in the first instance
- 02** Re-use items as many times as possible
- 03** Recycle what you can once you have re-used it and it is no longer able to be used or is no longer needed
- 04** Turn waste materials into a new product where possible i.e. the generation of waste from energy
- 05** Dispose of what is unable to be recovered in a responsible way

In summary, the aims of the Operational Waste Management Strategy are to:

- Provide an outline estimate of anticipated waste generation for the hotel;

- Provide guidance on waste management to ensure that adequate spatial provision for clean, hygienic and efficient storage and collection of waste is incorporated into the design. This is essential to the successful operation and aesthetics of the building;
- Enable the hotel FM teams to collect, store, recycle, re-use and dispose of the different types of waste quickly, sustainably and efficiently and in a discreet manner;
- Ensure national and local targets as well as any other client waste management aims and aspirations (which are outlined in full in **Appendix A**) are met;
- Ensure that waste management practices are efficient and improve productivity whilst championing environmental protection principles; and
- Look at initiatives to reduce the quantity of waste produced and maximise recycling rates within the hotel. A summary of the possible initiatives that could be explored by THFC are outlined in **Appendix B**.

2 Anticipated Generation and Bin Numbers

2.1 Waste Generation

In order to determine spatial requirements for waste in the hotel, outline waste generation and bin numbers have been generated. This has been based on the Populous drawings (POP-4494-PLN- GA dated July 2015) and rooms schedule (POP-A-PR-01-SD-XX-4494-0001) and a number of assumptions which are outlined below. LBH do not provide any specific generation rates for commercial or residential waste, therefore waste generation rates from waste audits undertaken in similar developments have been utilised. The waste generation estimates provided in **Table 1** are high level and are based on the following assumptions which are subject to change:

- The hotel will have approximately 275 staff; based on recommendations from the World Tourist organisation that state that a hotel of this standard (a Loft Starwood Brand or similar 4* hotel) would have an average of 12 staff per ten rooms, meaning this hotel would have an average of 275 employees;
- It is assumed 0.9 tonnes of waste per employee per year will be generated in the hotel. This is based on best practice standards published by the UK Hospitality industry;
- Waste will be collected three times per week for mixed recyclables, glass, residual and organic (food) waste by LBH with an average recycling target of 50%; and
- The British Standard (BS5906:2005)- Waste Management in Buildings, with weekly generation rates as follows: 70litres per 1 bed unit, 170 litres per week 2 bed unit, 240litres per week 3 bed unit.

Table 1: Hotel Waste Generation Estimates

Land use	Total number of rooms	Estimated number of employees	Weekly waste generation (kg/week)	Annual waste generation (tonnes/year)
Guestrooms	180	216	3,738	194
Serviced apartments	49	59	1,018	53
Total	229	275	4,756	247

Outline waste generation calculations estimate that approximately 247 tonnes per year of waste will be produced by the hotel.

2.2 Outline Bin Numbers

The waste generation estimates for the hotel have been used to estimate the likely number of bins that will be required within the building, shown in **Table 2**. This has been calculated based on an anticipated collection frequency of three times a week. Mixed recyclables, residual waste and organics will be collected. Other waste streams will be collected at less frequent intervals as and when they are needed.

Table 2: Residential towers and hotel waste bin number estimates

Land use	Bin numbers for recyclables	Bin numbers for glass	Bin numbers for organic (food) waste	Bin numbers for residual waste
Guestrooms and serviced apartments	11 x 1100 litre bins	1 x 240 litre bins	4 x 240 litre bins	2 x 1100 litre bins

3 Waste Management within the Hotel

3.1 Waste segregation

Within the hotel the following four main streams will be segregated: residual waste, mixed recyclables (paper, cardboard and plastics), glass and organic waste (food) as outlined in **Figure 2**.

Figure 2: Segregation of Waste and Recyclables



3.2 Key Waste Management Operational Principles

Waste management infrastructure within the hotel must ensure that waste management operations are hidden and do not interfere with guests or have a detrimental impact on the aesthetics of the buildings. Adequate spatial provision for clean, hygienic and efficient waste management services has been provided. A summary of how waste will be stored, collected and treated throughout the residential towers is provided below.

Storage

A dedicated waste and recycling store will be located on the ground floor of the hotel. The FM teams will be responsible for collecting waste from the guest rooms and serviced apartments and this will be directly transferred to the waste and recycling store, via the lifts or the stairs within the building, and segregating their waste before placing it into the appropriate receptacle.

The following LBH information has been used to provide advice to the design team on the recommended spatial provision within each of the residential towers. Assumptions have also been made by BuroHappold, based on previous experience on how much space per bin should be allocated. This includes space for the manoeuvring of the bins:

- The dimensions of a 1100 litre bin are: 985mm(D) x 1260mm(W) x 1370mm(H). It is estimated that each 1100 litre bin will each require approximately 3.5m² of space within the residential towers (this includes space around the bins); and
- The dimensions of a 240 litre bin are: 730mm(D) x 580mm(W) x 1080mm(H). It is estimated that each 240 litre bin will require approximately 1.4m² of space within the residential towers (this includes space around the bins).

The waste rooms have been positioned as close as reasonably practical to the lifts to minimise the distance that residents have to transport their waste. Access to the waste rooms will be restricted to the FM teams for security purposes. It is anticipated this will be via a swipe card or key code system. All bins will be washed when required by FM staff, a clearly marked area for bin cleaning to occur will be provided.

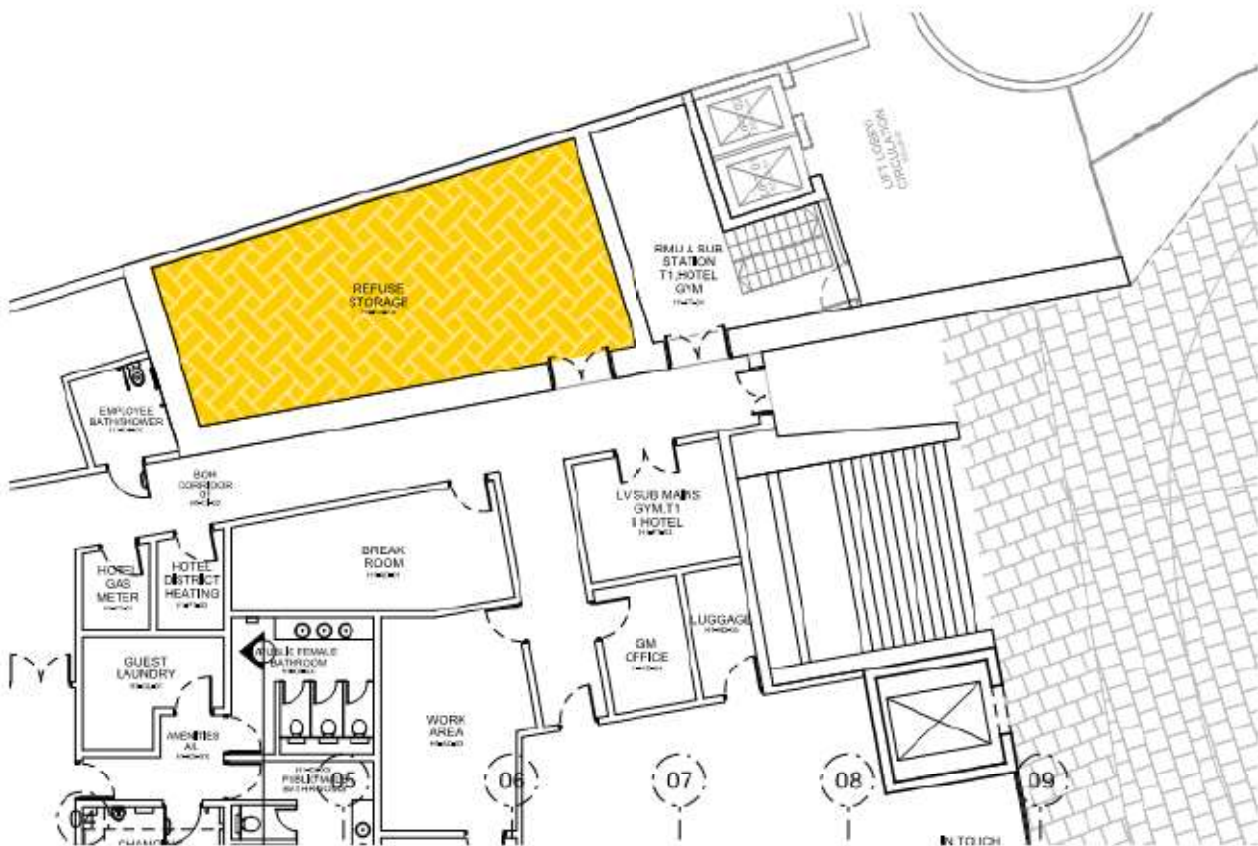
A summary of the proposed size of bin storage areas is provided in **Table 2** below.

Table 5 : Hotel estimated spatial provision

Land use	Minimum Bin Requirements	Minimum Bulky Waste Requirements	Additional Requirements	Total Space Required
Guestrooms and serviced apartments	13 x 1100 litre bins 5 x 240 litre bins	15m ²	5m ² bin wash area and overflow capacity	67.5m ²

Figure 3 below outlines that the waste and recycling store is 68m² and as such is appropriately sized in line with the above.

Figure 3: Waste and recycling store



Collection

Discussions with the design team have confirmed that the proposed optimum collection frequency for the development is three times weekly, this is to be agreed with the contractor servicing the development. This will be undertaken by the contractor on designated days.

The proposed strategy is for the FM team to manually move waste by hand out to the laybys either directly outside the hotel entrance on Park Road or to the waste collection bay further up Park Lane which is being created to service Tower D of the THFC Southern Residential development. Both collection points are within 25m of waste and recycling store. This is detailed in **Figure 4** below.

The potential for the use of Electric Vehicles (EVs) to collect the waste on the dedicated days and transport these out to the agreed collection points is to be determined through further work by the onsite FM team and waste contractor. Appropriate provisions have been made to enable this including EV charging points within the Masterplan.

Figure 4 : Hotel waste collection proposal

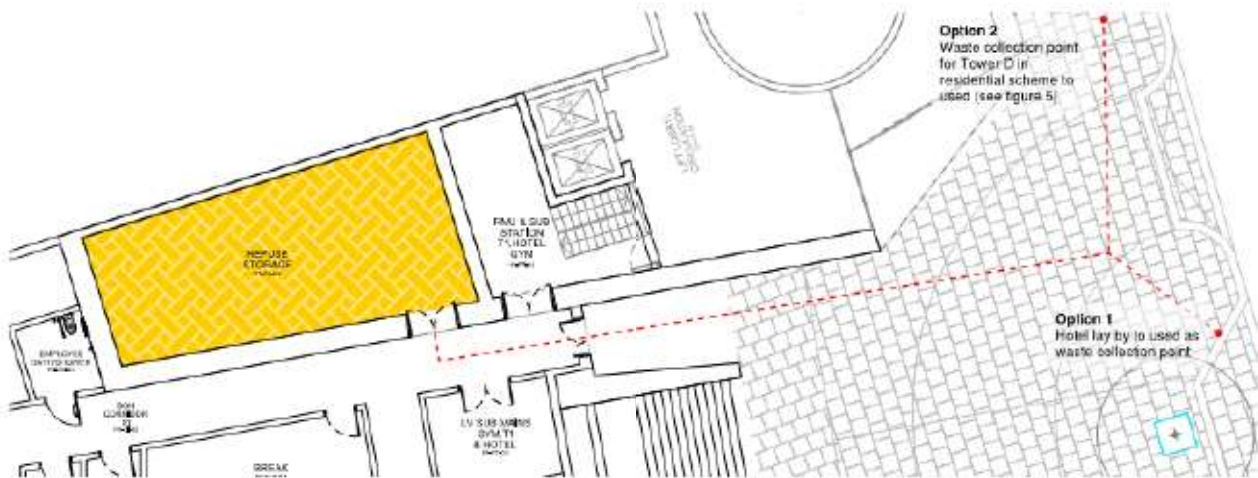
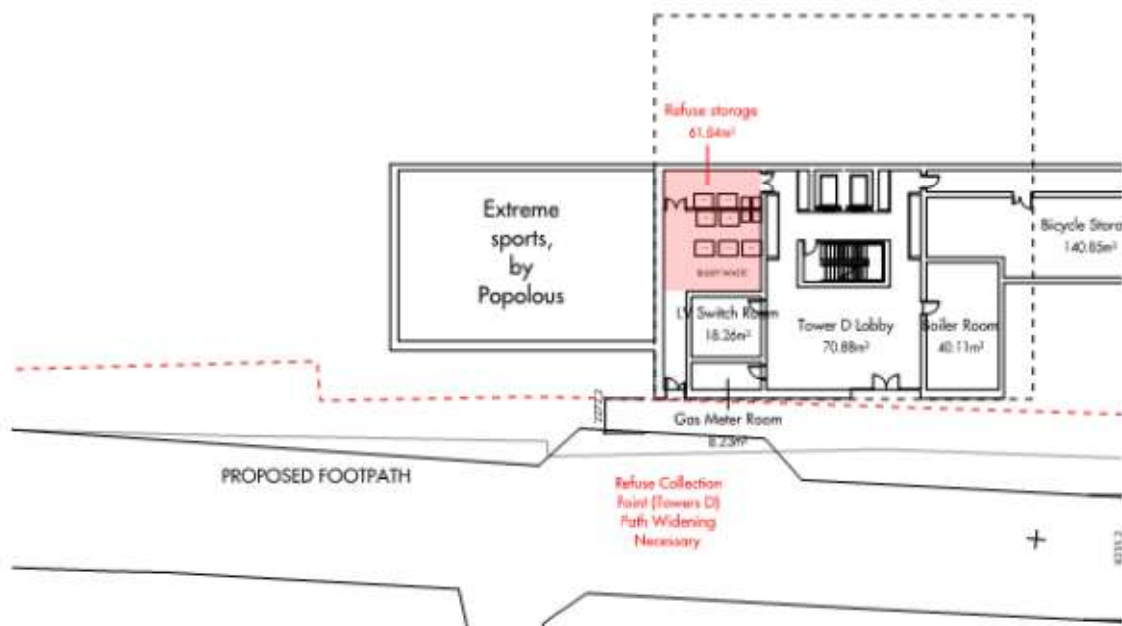


Figure 5: Waste collection point located on park Road to be created for THFC Southern Residential scheme



4 Conclusions

- Productive and efficient waste management practice is required within the hotel to ensure waste is managed in a way that ensures waste management operations are discreet and hygienic. The client hopes that the developments will be a leading example of excellent waste management within the hospitality sector, which achieves a recycling rate of at least 50%, with the aim of improving recycling rates and reducing waste generation each year following opening;
- Outline waste generation calculations estimate that approximately 247 tonnes per year and 4,756 kg per week will likely arise; and
- Waste will be segregated at source, where practicable into the following four main streams: residual waste, mixed recyclables (paper, cardboard, plastics), glass and organic waste (food).

Appendix A Waste management Practice and Policy

Information on the relevant national and local waste management practice and policy is provided below. There is a large amount of national policy and guidance for residential developments. Little LBH guidance for commercial waste is available. Existing guidance provides comprehensive and detailed storage and collection requirements for new developments within the borough although the focus is on residential developments. However, the guidance provides direction to ensure good practice and effective and efficient waste management.

National

Government Review of Waste Policy 2011

Prioritises efforts to manage waste in line with the waste hierarchy and reduce the carbon effect of waste. This document also encourages waste prevention and re-use, supporting greater efficiency and initiatives which reward and recognises individuals who reduce, re-use and recycle their waste. It also sets out plans to work with councils to increase the frequency and quality of rubbish collections and make it easier to recycle.

Hazardous Waste (England and Wales) (Amendment) Regulations 2009 SI 507

The Hazardous Waste Regulations, which came into force in 2005 provide requirements for controlling and tracking the movement of hazardous waste and bans mixing different types of hazardous waste.

The Waste Strategy for England 2007 (WS2007)

The Department of Environment Food and Rural Affairs (DEFRA) in 2009 updated the published WS2007. There is a focus primarily on Municipal Solid Waste (MSW), as well as making provision for the future creation of recycling / recovery targets for Commercial & Industrial (C&I) waste.

The Waste (England and Wales) (Amended) Regulations 2012

These regulations came into force 29 March 2011. The regulations implement the revised Waste Framework Directive and require businesses to confirm that they have applied the waste management hierarchy when transferring waste. They introduce a two-tier system for waste carrier and broker registration along with a new concept of waste dealer. They also exclude some categories of waste from waste controls and include a small number of radioactive materials.

Making Space for Waste, A Practical Guide for Developers and Local Authorities, June 2010

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London Borough of Haringey (LBH)

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- London Borough of Haringey Local Plan;
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- Promoting the prevention and reduction of waste produced in the borough, increasing the re-use of materials wherever possible, and seeking to increase recycling and composting of waste;
- Ensuring that new development including change of use provides accessible, adequate and well-designed internal and external storage facilities and recycling infrastructure for both residual and recyclable wastes;
- Ensuring that waste is minimised during the design and construction of new developments, encourage the use of sustainably sourced materials and requiring developments to make on-site provision for the recycling and re-use of construction, demolition and operational wastes;
- Ensuring there is sufficient land allocated for waste management purposes and establishing appropriate policies for waste applications to maximise self-sufficiency through the Joint NLWP and applying its policies to waste development. Additionally the council will safeguard existing waste management sites within LBWF; and
- Encouraging waste to be treated as close to the source as possible and encouraging sustainable movement of waste, maximising the potential use of rail and water transport where waste is not treated at its source.

Tottenham Hotspur Football Club Waste Management

THFC is committed to manage its waste in line with the waste hierarchy, as shown in **Figure 1**, and other relevant national and local legislation and guidance. The client recognises that in order for the buildings to operate in a productive and efficient manner good waste management is required. A meeting with THFC staff and the design team was held on 12th February 2015 to discuss the preliminary waste management aims and aspirations.

THFC have produced a Waste Management Policy to ensure that all waste generated is disposed of safely and efficiently to ensure good waste management. This document is principally focussed on the stadium although some of the key objectives and principles are relevant to the hotel and residential towers. The key principles and aims and aspirations for the hotel are summarised below: #

Hotel

- Waste is to be managed in line with the waste hierarchy with zero waste sent to landfill;
- Encourage waste minimisation and promote recycling and re-use with a minimum of 50% recycling aiming to target 60% recycling and composting by 2020 in line with London Major and LBH targets;
- Develop productive and efficient waste management practice to ensure the new developments are leading examples of excellent waste management within the hotel sector;
- Provide appropriate storage facilities for recyclables, organic (food) and residual wastes;
- Provision for other wastes including hazardous waste, confidential waste, bulky waste and Waste Electrical and Electronic Equipment (WEEE) should be made available as appropriate;
- Where possible bulk waste on site prior to collection (i.e. compacting) to reduce the volume of waste;
- Keep back of house and public realm areas segregated in terms of waste as far as possible to ensure waste management operations are discreet from residents, guests and visitors;
- Assess opportunities for packaging reductions, reuse or recovery, but in a manner that does not negate need to reduce waste volumes;
- Raise awareness of waste management issues by offering waste management training to all staff; and
- Undertake an annual waste audit to track the quantities of residual waste, organics and recyclables that are produced. This will enable the hotel to monitor their performance against targets.

Appendix B Hotel Initiatives to Reduce Waste

It is recommended that the following initiatives are considered by THFC to reduce the amount of waste and improve recycling and re-use within the hotel. If these initiatives are adopted, it is essential that spatial provision is allocated:

Type	Option
Sustainable Catering Alternatives	
Reduce	Promote the serving of beer on tap to reduce the plastic and glass produced
Reduce	Do not serve drinks in tins and aluminium cans to eliminate metal as a waste stream
Reduce	Use of glasses to serve drinks instead of disposable cups, particularly in hospitality areas
Reduce	Minimise packaging of products and encourage the backhauling and re-use of packaging
Reduce	Consider the use of compostable packaging for crisps, chocolate, drinks and other snacks
Reduce	Use an inventory system to provide control over supplies to avoid over-ordering and waste
Reduce	Use of part-prepared food (i.e. peeled vegetables, de-boned meat etc.) and freezing of food
Reduce	Review of portion sizes to ensure only as much food as is needed is prepared and cooked
Reduce	Use of cutlery, china and glass as oppose to disposable crockery and cutlery
Reduce	Inform staff that they are to hand out straws, lids, and napkins only when requested
Reduce	All condiments should be dispensed from bulk containers rather than single-serve packets
Reduce	Consider purchasing beverage mixes in concentrated form
Reduce	Use of individually dispensed, unwrapped plastic utensils, biodegradable utensils, or none at all
Recycle	Use of locally sourced food and drink and donate surplus food to local food banks (if edible)
Recycle	Streamline drinks sales, ideally to the complete use of plastic bottles as oppose to glass
Recycle	Streamline food packaging, ideally to the same material (cardboard or plastic) to make it easier to achieve high quality recycled materials
Other Alternatives	
Reduce	Utilising washable cloth towels instead of paper towels to clean up behind the counters
Reduce	Use of hand dryers instead of paper towels
Reduce	Minimise paper-based marketing and circulate by email and buying recycled content supplies
Recycle	Bins at ticket turnstiles to encourage disposal prior to entering i.e. cans, half eaten food etc.
Recycle	Sell or give old equipment and furniture to local businesses, charity or educational projects
Recycle	Recycling printer cartridges
Use of Technology	
Reduce	Consider the use of a dewatering system to reduce the volume of food waste
Recycle	A glass crusher could be purchased. This would require clear and coloured glass to be separated and then crushed outside of operating hours to avoid noise disturbing matches
Recycle	Flatten and bale cardboard generated from packaging to reduce bulk using a baler
Recycle	Bale plastic generated from general concourse areas using a baler

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Tottenham Hotspur Football Club

Southern Residential Operational Waste Management Strategy

031627

1 September 2015

Revision 00

Revision	Description	Issued by	Date	Checked
00	Southern Residential OWMS for planning	Fergus Anderson	01.09.15	James Hobson

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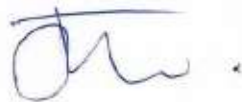
This report has been prepared for the sole benefit, use and information of Tottenham Hotspur Football Club for the purposes set out in the report or instructions commissioning it. The liability of Buro Happold Limited in respect of the information contained in the report will not extend to any third party.

author **Fergus Anderson**

date **01.09.15**

approved **James Hobson**

signature



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1 Introduction

An Outline Operational Waste Management Strategy is required to support the outline planning application for the Tottenham Hotspur Football Club (THFC) four residential towers located in Tottenham, North London. The proposals are for the towers to contain a mixture of studios, 1, 2, and 3 bedroom flats as well as 5 town houses. The residential towers development forms sits in the north east corner of the wider THFC Masterplan which includes the stadium, THFC experience, THFC hotel and a public square (which will contain spectator screens for members of the public to watch events taking place within the stadium).

This document forms the Operational Waste Management Strategy for the THFC residential towers only and covers how waste within the development will be managed. This development will operate and be run independently. A separate Operational Waste Management Strategy has been prepared for the stadium, THFC experience, THFC hotel and public square. The planning application for the residential towers is due to be submitted to the London Borough of Haringey (LBH) in August 2015.

The management of solid waste is an important element to consider as buildings are designed. Planning for future operational waste management ensures that a building will be able to operate efficiently and sustainably while minimising the impacts on the designed requirements building performance and site users. Good waste management will be essential ensure safe operational practice throughout the development. The waste management strategy must ensure that the residential tower Facilities Management (FM) teams can collect, store, recycle, re-use and dispose of waste quickly and efficiently and in a discreet manner in line with THFC Waste Management Policy and the waste hierarchy as shown in **Figure 1**. Waste management operations will need to be hidden from visitors and residents to ensure that they do not interfere with the day to day operations within the residential towers.

Figure 1: The Waste Hierarchy



- 01** Minimise the amount of waste produced and avoid producing waste in the first instance
- 02** Re-use items as many times as possible
- 03** Recycle what you can once you have re-used it and it is no longer able to be used or is no longer needed
- 04** Turn waste materials into a new product where possible i.e. the generation of waste from energy
- 05** Dispose of what is unable to be recovered in a responsible way

In summary, the aims of the Operational Waste Management Strategy are to:

- Provide an outline estimate of anticipated waste generation for the residential towers;
- Provide guidance on waste management to ensure that adequate spatial provision for clean, hygienic and efficient storage and collection of waste is incorporated into the design. This is essential to the successful operation and aesthetics of these buildings;
- Enable the residential towers FM teams to collect, store, recycle, re-use and dispose of the different types of waste quickly, sustainably and efficiently and in a discreet manner;
- Ensure national and local targets as well as any other client waste management aims and aspirations (which are outlined in full in **Appendix A**) are met; and
- Ensure that waste management practices are efficient and improve productivity whilst championing environmental protection principles.

2 Anticipated Generation and Bin Numbers

2.1 Waste generation

In order to determine spatial requirements for waste in the residential towers, outline waste generation and bin numbers have been generated. This has been based on the Allies and Morrison area schedule (1007 Tottenham Towers Rev 2, dated 13/07/15) and drawings (1007_03, dated 02/06/15) and a number of assumptions which are outlined below. LBH do not provide any specific generation rates for commercial or residential waste, therefore waste generation rates from waste audits undertaken in similar developments have been utilised. The waste generation estimates provided in **Table 1** are high level and are based on the following assumptions which are subject to change:

- Revised accommodation schedule dated 13/07/15;
- Average recycling target of 50%;
- The British Standard (BS5906:2005)- Waste Management in Buildings, with weekly generation rates as follows: 100litres per 1 bed unit, 170 litres per week 2 bed unit, 240litres per week 3 bed unit; and
- An outline agreement with LBH was made which allowed for waste from the residential towers can be collected twice weekly (if required) for mixed recyclables, residual and organic (food) waste by LBH.

Table 1: Residential Towers and Hotel Waste Generation Estimates

Land use	Capacity (units)	Estimated weekly waste (litres per week)
Tower A	168	23,520
Tower B	90	12,820
Tower C	232	32,160
Tower D	90	12,820
Town Houses	5	1,200

Outline waste generation calculations estimate that approximately 83,000 litres per week from the four residential towers. This is equivalent to approximately 16,500 tonnes of waste per week. A further break down of waste generation on the basis of room type (e.g. studio litres per week) has been provided in **Appendix B**.

2.2 Outline bin numbers

The waste generation estimates for the residential towers have been used to estimate the likely number of bins that will be required within the buildings, shown in **Table 2**. This has been calculated based on an anticipated collection frequency twice a week collection. Mixed recyclables, residual waste and organics will be collected. Other waste streams will be collected at less frequent intervals as and when they are needed.

Table 2: Residential towers and hotel waste bin number estimates

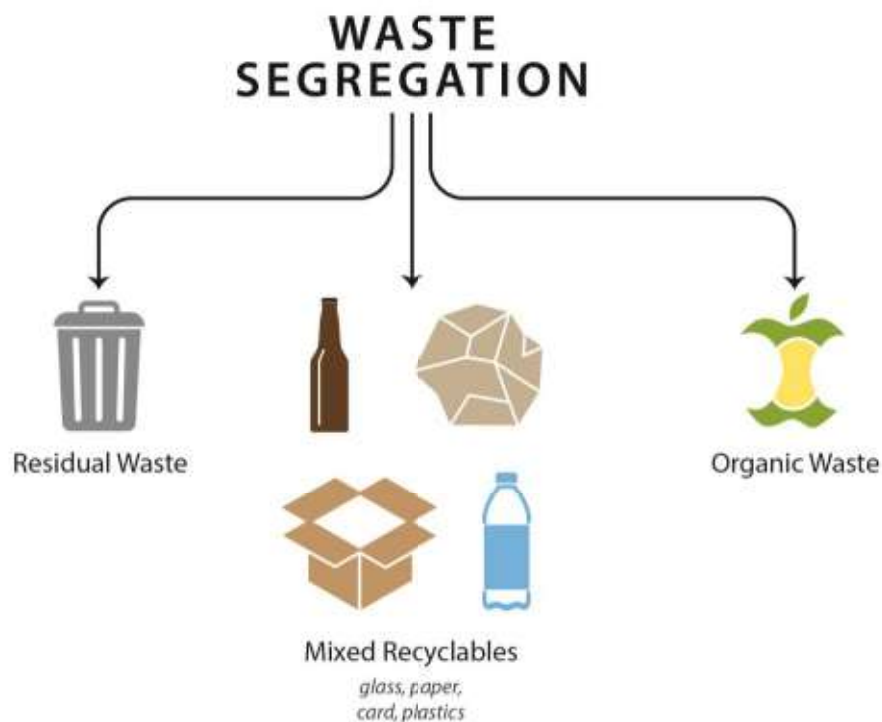
Land use	Bin numbers for recyclables	Bin numbers for organic (food) waste	Bin numbers for residual waste
Tower A	6 x 1100 litre bins	5 x 240 litre bins	3 x 1100 litre bins
Tower B	2 x 1100 litre bins	6 x 240 litre bins	2 x 1100 litre bins
Tower C	8 x 1100 litre bins	14 x 240 litre bins	5 x 1100 litre bins
Tower D	3 x 1100 litre bins	6 x 240 litre bins	2 x 1100 litre bins

3 Waste Management within the Residential Towers

3.1 Waste Segregation

Within the residential towers the following three main streams: residual waste, mixed recyclables (glass, paper, cardboard and plastics) and organic waste (food) as outlined in **Figure 2**.

Figure 2: Segregation of Waste and Recyclables



3.2 Key Waste Management Operational Principles

Waste management infrastructure within the towers must ensure that waste management operations are hidden and do not interfere with residents or have a detrimental impact on the aesthetics of the buildings. Adequate spatial provision for clean, hygienic and efficient waste management services has been provided. A summary of how waste will be stored, collected and treated throughout the residential towers is provided below.

Storage

Each of the residential towers contains a dedicated waste and recycling room and a smaller bulky waste room on the ground floor of the buildings. Residents will be responsible for transferring their waste from their property to the ground floor, via the lifts or stairs within the building and segregating their waste and placing it into the appropriate receptacle. Each of the buildings is self-sufficient and all waste will remain within the building in which it is generated with rooms sized accordingly.

The following LBH information has been used to provide advice to the design team on the recommended spatial provision within each of the residential towers. Assumptions have also been made by BuroHappold, based on previous experience on how much space per bin should be allocated. This includes space for the manoeuvring of the bins:

- The dimensions of a 1100 litre bin are: 985mm(D) x 1260mm(W) x 1370mm(H). It is estimated that each 1100 litre bin will each require approximately 3.5m² of space within the residential towers (this includes space around the bins); and
- The dimensions of a 240 litre bin are: 730mm(D) x 580mm(W) x 1080mm(H). It is estimated that each 240 litre bin will require approximately 1.4m² of space within the residential towers (this includes space around the bins).

The waste and recycling room is made up of two distinct areas. It comprises a small area, which is accessible to residents to deposit their waste and contain a minimum of three bins (1 x 1100 litre bin for residual waste, 1 x 1100 litre bin for recyclables and 1 x 240 litre bin for organic (food) waste). A larger area will also be present which contains the remainder of the bins required for the tower. This room will only be accessible to the FM team who will service the small room on a daily basis and exchange the full bins with empty bins. If residents have access to all of the bins it is likely they will just throw waste into the nearest bin and recycling rates will be poor.

The larger of the two areas will include some spare capacity to prevent overflow during unusual activity i.e. bad weather, collection cancellations, refurbishment phases etc. and a bin wash area. All bins will be washed when required by FM staff. Space for cleaning equipment will also be allocated within the larger area.

The waste rooms have been positioned as close as reasonably practical to the lifts to minimise the distance that residents have to transport their waste. All flats will be within a 30m horizontal travelling distance of the waste room. A summary of the sizes of the rooms provided in each tower are outlined in **Table 3** below.

Table 3: Waste and recycling and bulky waste room size and components

Land use	Minimum Required Size of Waste and Recycling room	Size of Bulky Waste room	Room components
Tower A	26m ²	5m ²	Bin wash
Tower B	14m ²	5m ²	Bin wash
Tower C	36m ²	10m ²	Bin wash
Tower D	15m ²	5m ²	Bin wash

Access to the waste rooms will be restricted to residents, the FM team and the LBH waste collection teams only for security purposes. It is anticipated this will be via a swipe card or key code system.

Collection

Discussions the LBH have been undertaken and it has been agreed that a twice weekly collection of waste will be possible (confirmed during meeting 04.08.15). This will be undertaken by LBH on designated days. There is access from the waste rooms to external serving bays on Park Lane and Worcester Avenue where waste collection vehicles will be able to pull up outside the towers and collect the residential waste. Waste will be wheeled out to the laybys by the FM team on the designated days. An illustrative plan is provided below in **Figure 3**.

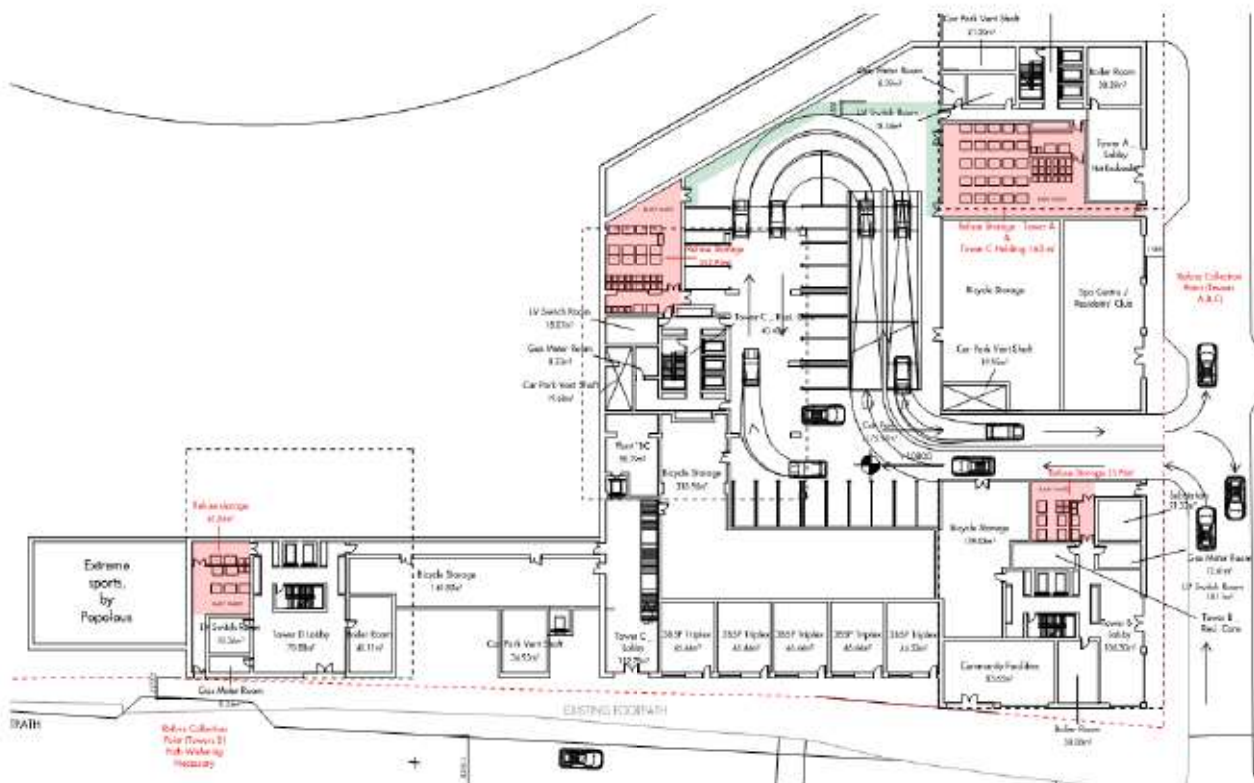


Figure 3 : Waste collection strategy

Due to the limitations outlined waste cannot be directly collected from Tower C by the current fleet of refuse vehicles serving Haringey. For the purpose of servicing Tower C where waste collection vehicles will not be able to access and operate within the car park area, waste will be wheeled by the FM team from the waste storage area around the north of the car park to a holding area in Tower A. A 1.5m wide marked route for pedestrian movement has been created to make this route as safe as possible. This will then be serviced as above.

On agreed collection days a designated member of the FM will be responsible for moving bins from Tower C to Tower A prior to waste collection services beginning in the borough either early morning or night before. This will ensure that the bins from Tower C are in Tower A ready for collection, the contractor with the assistance of the FM team will then move bins out from the refuse stores to the agreed collection points when the contractor arrives on site.

In order to overcome the above the team has sized the refuse store in Tower A suitably so as it can contain half a weeks' worth of waste from both Towers A and C. This is illustrated in **Figure 4** below.

In the instance that the designated member of the FM team is not on site for reasons of sickness, annual leave or otherwise the duty will be handed over to an alternative member of the FM team and a management plan with such procedures will be prepared to mitigate this. Should in the unlikely event that all the FM are not available this duty will be undertaken by the FM team from others areas of the Masterplan (i.e. stadium or hotel).

It is acknowledged that the bins once full are heavy and as such it is proposed that an Electric Vehicle (EV) is used to transport waste from Tower C to holding in Tower A. Provisions for this (i.e. parking and charging) will be made onsite or accommodated elsewhere in the Masterplan. Bin rooms and doors have been appropriately sized to enable this.

Figure 4: Waste storage area Tower A indicating actual bin number predicted and their storage allowance (to scale)

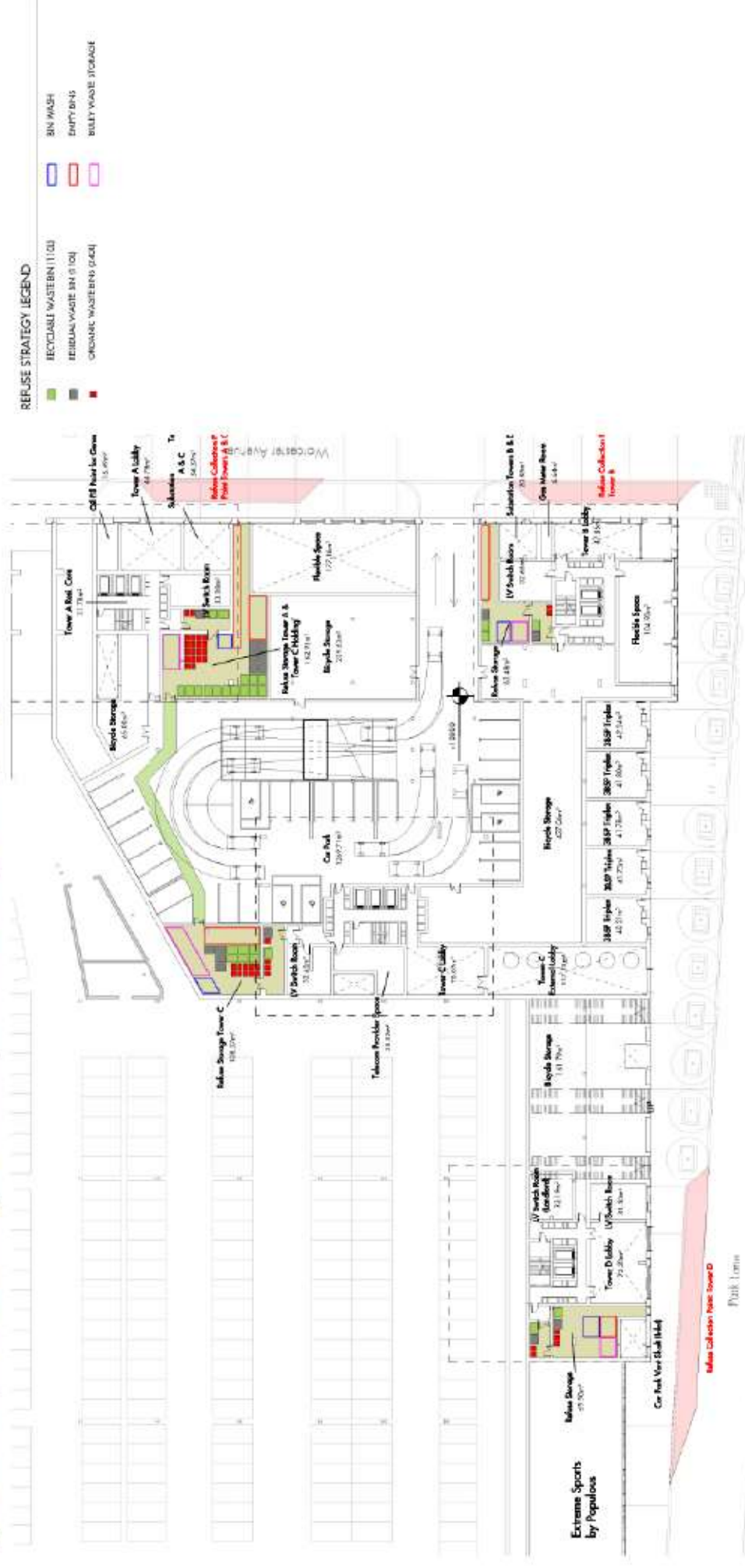


Figure 5 details the proposed layby design.

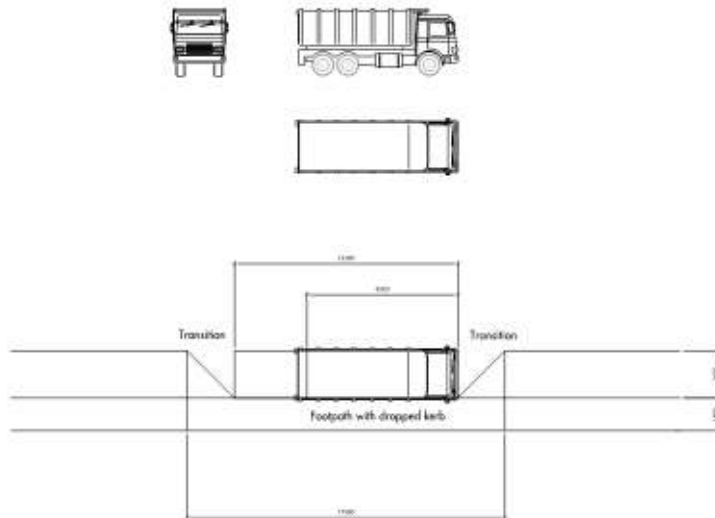


Figure 5 : Proposed layby diagram

Education

THFC will aim to educate residents about the importance of recycling and provide three-stream bins within all units. Where bins are located within the waste rooms, clear signage with recycling and disposal guidance will be provided.

4 Conclusions

- Productive and efficient waste management practice is required within the residential towers to ensure waste is managed in a way that ensures waste management operations are discreet and hygienic. The client hopes that the developments will be a leading example of excellent waste management within the residential and hospitality sectors, which achieves a recycling rate of at least 50%, with the aim of improving recycling rates and reducing waste generation each year following opening;
- Outline waste generation calculations estimate that approximately 83,000 litres per week; and
- Waste will be segregated at source, where practicable into the following three main streams: residual waste, mixed recyclables (glass, paper, cardboard, plastics) and organic waste (food).
- This strategy has been agreed to by Jim Goodson and Wisdom Osei-Wusu of Harringey Council as per their confirmation email 26.08.15.

Appendix A - Waste Management Practice and Policy

Information on the relevant national and local waste management practice and policy is provided below. There is a large amount of national policy and guidance for residential developments. Little LBH guidance for commercial waste is available. Existing guidance provides comprehensive and detailed storage and collection requirements for new developments within the borough although the focus is on residential developments. However, the guidance provides direction to ensure good practice and effective and efficient waste management.

National Policy

Government Review of Waste Policy 2011

Prioritises efforts to manage waste in line with the waste hierarchy and reduce the carbon effect of waste. This document also encourages waste prevention and re-use, supporting greater efficiency and initiatives which reward and recognises individuals who reduce, re-use and recycle their waste. It also sets out plans to work with councils to increase the frequency and quality of rubbish collections and make it easier to recycle.

Hazardous Waste (England and Wales) (Amendment) Regulations 2009 SI 507

The Hazardous Waste Regulations, which came into force in 2005 provide requirements for controlling and tracking the movement of hazardous waste and bans mixing different types of hazardous waste.

The Waste Strategy for England 2007 (WS2007)

The Department of Environment Food and Rural Affairs (DEFRA) in 2009 updated the published WS2007. There is a focus primarily on Municipal Solid Waste (MSW), as well as making provision for the future creation of recycling / recovery targets for Commercial & Industrial (C&I) waste.

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- Ensuring that waste is minimised during the design and construction of new developments, encourage the use of sustainably sourced materials and requiring developments to make on-site provision for the recycling and re-use of construction, demolition and operational wastes;
- Ensuring there is sufficient land allocated for waste management purposes and establishing appropriate policies for waste applications to maximise self-sufficiency through the Joint NLWP and applying its policies to waste development. Additionally the council will safeguard existing waste management sites within LBWF; and
- Encouraging waste to be treated as close to the source as possible and encouraging sustainable movement of waste, maximising the potential use of rail and water transport where waste is not treated at its source.

Tottenham Hotspur Football Club Waste Management Policy

THFC is committed to manage its waste in line with the waste hierarchy, as shown in **Figure 1**, and other relevant national and local legislation and guidance. The client recognises that in order for the buildings to operate in a productive and efficient manner good waste management is required. A meeting with THFC staff and the design team was held on 12th February 2015 to discuss the preliminary waste management aims and aspirations.

THFC have produced a Waste Management Policy to ensure that all waste generated is disposed of safely and efficiently to ensure good waste management. This document is principally focussed on the stadium although some of the key objectives and principles are relevant to the hotel and residential towers. The key principles and aims and aspirations for the residential towers are summarised below:

Residential Towers

- Waste is to be managed in line with the waste hierarchy with zero waste sent to landfill;
- Encourage waste minimisation and promote recycling and re-use with a minimum of 50% recycling aiming to target 60% recycling and composting by 2020 in line with London Major and LBH targets;
- Provide appropriate storage facilities for recyclables, organic (food) and residual wastes; and
- Provision for other wastes including bulky waste.

Appendix B – Waste generation (per room type)

Land Use	Units	Waste Generation Rate (litres per household)	Weekly Litres
Tower A			
Studio	4	100	400
One bedroom	71	100	7100
Two bedrooms	89	170	15130
Three bedrooms	4	240	960
TOTAL	168	-	23590

Land Use	Units	Waste Generation Rate (litres per household)	Weekly Litres
Tower B			-
Studio	4	100	400
One bedroom	38	100	3800
Two bedrooms	39	170	6630
Three bedrooms	9	240	2160
TOTAL	90	-	12990

Land Use	Units	Waste Generation Rate (litres per household)	Weekly Litres
Tower C			-
Studio	4	100	400
One bedroom	103	100	10300
Two bedrooms	121	170	20570

Three bedrooms	4	240	960
TOTAL	232	-	32230

Land Use	Units	Waste Generation Rate (litres per household)	Weekly Litres
Tower D			
Studio	4	100	400
One bedroom	38	100	3800
Two bedrooms	39	170	6630
Three bedrooms	9	240	2160
TOTAL	90	-	12990

Land Use	Units	Waste Generation Rate (litres per household)	Weekly Litres
Town House			
Two bedrooms			
Three bedrooms	5	240	1200
TOTAL	5	-	1200

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Appendix 3.1

Planning Policy Overview



Planning Policy

- 1.1. The purpose of this Section is to identify the key national, regional and local planning policy and guidance relevant to the determination of the application for the Development, and against which the proposals have had regard to during design development. An analysis of the key policies and tests is included in the relevant sections. A complete Planning Policy Index and review is included at Appendix [x] of this Statement.
- 1.2. Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires planning applications to be determined in accordance with the Development Plan, unless material considerations indicate otherwise.

I) Development Plan

- 1.3. The relevant statutory development plans for the site comprises of: the Haringey Local Plan: Strategic Policies (2013); and the Saved Policies of the Haringey Unitary Development Plan (UDP) (2006) and the London Plan (March 2014 (as amended)).
- 1.4. In addition to the Development Plan, regard has been had to national planning policy and guidance as set out in the National Planning Policy Framework (NPPF) and National Planning Policy Guidance (NPPG). Regional supplementary documents and guidance as adopted by the Mayor of London and local supplementary guidance as adopted by LBH.

II) National Planning Policy and Guidance

- 1.5. National planning policy is set out in the National Planning Policy Framework (NPPF) which was adopted on 27 March 2012. The NPPF establishes overarching principles of the planning system, including the requirement of the system to “drive and support development” and supports “approving development proposals that accord with the development plan without delay”. There is also a “presumption in favour of sustainable development...[which] should be seen as a golden thread running through both plan-making and decision-taking”.
- 1.6. The NPPF focuses on the delivery of sustainable development. In particular, the core planning principles include, amongst others, to “drive and support development”. In determining planning applications, the NPPF acknowledges that the planning system is plan-led, and that Local Plans should be the starting point for the determination of any planning applications.
- 1.7. With regard to this application, the NPPF at section 1 sets out the importance of a strong and competitive economy with paragraph 19 setting out that the government is committed to ensuring that the planning system does everything it can to support sustainable economic growth.
- 1.8. Throughout the NPPF the need to deliver housing in line with demand and consequently significantly boost the supply of housing is set out. Specifically in paragraph 49 guidance sets out that applications should be considered in the context of the presumption in favour of sustainable development.
- 1.9. At Section 12 Conserving and Enhancing the Historic Environment, sets out the Government’s overarching planning policies put in place to conserve the historic environment and heritage assets. It outlines a balanced approach to the conservation of the historic environment.

Appendix 3.1

Planning Policy Overview



III) London Plan (2015)

- 1.10. The London Plan was formally adopted in July 2011 and is the overall strategic plan for London, setting out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years. The London Plan has recently been revised by the revised early minor alterations (REMA) (2013) and more recently Further Alterations to the London Plan (FALP) (2015) to reflect key housing and employment issues within London.
- 1.11. The London Plan contains a number of key policies relevant to the development proposals including:
- Policy 2.6 Outer London: Vision and Strategy
 - Policy 2.7 Employment: Outer London Economy
 - Policy 3.1 Ensuring Equal Life Chances for All
 - Policy 3.3 Increasing Housing Supply
 - Policy 3.4 Optimising Housing Supply
 - Policy 3.7 Large Residential Developments
 - Policy 4.1 Developing London's Economy
 - Policy 4.5 London's Visitor Infrastructure
 - Policy 4.6 Support for and enhancement of arts, culture, sport and entertainment
 - Policy 7.4 Local Character
 - Policy 7.6 Architecture
 - Policy 7.7 Location and Design of Tall and Large Buildings
 - Policy 7.8 Heritage Assets and Archaeology
 - Policy 7.9 Heritage-Led Regeneration

IV) Haringey Local Plan: Strategic Plan (2013)

- 1.12. Local planning policy is set out in Haringey Local Plan: Strategic Policies document that was adopted in 2013. The UDP Saved Policies (January 2010) are also still relevant and support the Strategic Policies by providing additional detail. The Council also have Supplementary Planning Guidance (SPG's) that need to be taken into consideration.
- 1.13. Key LBH adopted policies that are relevant to the development proposals are as follows:
- Policy SP0: Presumption in favour of sustainable development
 - Policy SP1: Managing Growth
 - Policy SP8: Employment
 - Policy SP2: Housing
 - Policy SP14: Culture and Leisure
 - Policy SP15: Health and Well-being
 - Policy SP16: Community Facilities
 - Policy SP12: Conservation
 - Policy SP11: Design
 - Policy SP13: Open Space and Biodiversity
 - Policy SP7: Transport
 - Policy SP4: Energy / Sustainability

V) Unitary Development Plan (2002)

- Policy EMP5: Promoting Employment Uses
- Policy EMP4: Non-employment generating Uses
- Policy CLT4: Hotels, boarding houses and guest houses
- Policy CSV4: Alterations and Extensions to Listed Buildings
- Policy CSV5: Alterations and Extensions in Conservation Areas
- Policy CSV7: Demolition in Conservation Areas
- Policy UD3: General Design Principles
- Policy OS8: Heritage Land

Supplementary Planning Documents and Guidance

- There is a range of local planning guidance that would be used alongside the aforementioned documents to help determine the application. These include the:

I) Regional

- Draft Interim Housing Supplementary Planning Guidance (May 2015)
- London View Management Framework (2011)
- London Planning Statement (May 2014)
- Shaping Neighbourhoods: Play and Informal Recreation SPG (2012)
- Sustainable Design and Construction SPG (April 2014)
- Social Infrastructure SPG (May 2015)

II) Local

- Sustainable Design and Construction SPD 2013
- Design Guidance SPG 1a 2006
- Conservation and Archaeology SPG 2 (DRAFT 2006)
- Shopfronts, Signage & Security SPG 6a (DRAFT 2006)
- Advertisements SPG 6b (DRAFT 2006)
- Vehicle and Pedestrian Movement SPG 7a (DRAFT 2006)

Emerging Planning Policy

1.14. In addition to adopted planning policy and guidance, regard has been had to emerging policy, as identified above. The most significant emerging policy documents are:

- Proposed Alterations to Haringey's Adopted Strategic Policies
- Development Management Policies DPD
- Site Allocations DPD

1.15. LBH are proposing a further round of consultation on the 'soundness' of the documents in September 2015 prior to their review by the Secretary of State and formal adoption. Consequently, we do not anticipate that these documents will be adopted prior to the application being determined.

Appendix 3.1

Planning Policy Overview



- 1.16. Where relevant, guidance documents and incoming policies have been referred to in Section [x] of this Statement and in the relevant supporting documents which accompany the application.

Cumulative Development Schedule

Major Applications (10+ units/1000+sqm floor space) in the N17 Post Code (Tottenham, South Tottenham, Haringey) approved in the last 5 years or pending.

Also including significant applications outside of N17.

<u>Reference Number</u>	<u>Site Address</u>	<u>Proposed Development</u>	<u>Map Ref</u>	<u>Determination</u>	<u>Topics that have included the developments within their assessments</u>
HGY/2008/2220	Park Tavern Public House, 220 Park Lane London N17 0HY	Demolition of existing buildings and erection of 4 storey building comprising 366 sqm of retail (A1) floorspace plus Kingdom Hall (D1) on the ground floor, with 34 flats, (2 x one bed, 13 x two bed, 15 x three bed and 4 x four bed flats on the upper floors), plus 17 car spaces and 44 cycle spaces.	1	Granted: 20/01/2010	-
HGY/2009/1122	700-702 High Road (and land to rear with frontage onto Argyle Passage and Bromley Road) London N17 0AE	Demolition of existing building behind retained facade and erection of 1 x four storey building comprising 6 x two bed and 3 x three bed flats and 1 retail / commercial unit; erection of a 1 x three storey building comprising 3 x three bed flats; the erection of 4 two storey houses (comprising 2 x three bed and 2 x four bed) to front onto Argyle Passage and Bromley Road; provision of 2 disabled parking spaces and associated landscaping).	2	Granted: 06/08/2010	Air Quality, Cultural Heritage, Noise and Traffic
HGY/2009/1532	624 High Road London N17 9TL	Retention of the existing structural frame comprising Scotland Green House, rebuilding of the front and rear elevations, adding a fourth storey to the existing building and erection of a new four storey building to the front of the site to provide 42 residential units and one commercial unit.	3	Granted: 18/01/2010	Air Quality, Cultural Heritage, Noise and Traffic
HGY/2009/2123	Land between Moira Close & Adams Road London N17 6HZ	Demolition of Broadwater Farm Primary School and William C Harvey Special School, and redevelopment of the site to provide a purpose-built two storey inclusive learning centre (520 places, primary age) to incorporate Broadwater Farm Primary, William C Harvey and Moselle School Special Schools with associated car parking, external landscaping and new pedestrian and vehicle access from Adams Road.	4	Granted: 16/03/2010	-
HGY/2009/2140	500 White Hart Lane London N17 7NA	Demolition of existing buildings (500 White Hart Lane and Hubert House) and erection of new steel clad light industrial unit. HGY/2013/0688: Application for a new planning permission to replace an extant planning permission HGY/2009/2140 (and as amended by HGY/2010/1189) in order to extend the time limit for implementation of demolition of existing buildings (500 White hart Lane and Hubert House) and erection of new steel clad light industrial unit.	5	Granted (2140): 12/05/2010 Granted (0688): 07/08/2013	-
HGY/2010/0201	596-606 High Road London N17 9TA	Demolition of existing buildings, (excluding No. 596 High Road), and erection of 3 storey buildings to provide 175 sqm of A1 / A2 / A3 floorspace and 39 residential units together with formation of vehicular access.	6	Granted: 15/04/2010	Cultural Heritage and Townscape and Visual
HGY/2010/1000 HGY/2013/1973 HGY/2013/1976 HGY/2015/0797 HGY/2015/0964	Tottenham Hotspur Stadium, Bill Nicholson Way, 748 High Road London	HGY/2010/1000: Demolition and comprehensive redevelopment of a stadium (Class D2) with hotel (Class C1), retail (Class A1 and/or A2 and/or A3 and/or A4 and/or A5), museum (Class D1) offices (Class B1) and housing (Class C3); together with associated	7	Granted (/1000): 21/09/2011	Cultural Heritage and Townscape and Visual

	N17 OAL	facilities including the construction of new and altered roads, footways, public and private open spaces; landscaping and related works. Details of "appearance" and "scale" are reserved in relation to the proposed residential and hotel buildings HGY/2013/1973: Variation of condition 42 attached to planning permission HGY/2011/2350 "Proposed demolition of buildings and development of a foodstore (Use Class A1) together with educational uses (Use Class D1); stadium-related uses (Use Class D2); showroom/brand centre (sui generis); and associated facilities including car parking, the construction of new and altered vehicle and pedestrian accesses, private open spaces, landscaping and related works", for variation of fourth floor plan to allow for proposed change of use from stadium-related uses to Use Class B1a and associated minor alterations. HGY/2013/1976: Variation of condition 42 attached to planning permission HGY/2011/2350 "Proposed demolition of buildings and development of a foodstore (Use Class A1) together with educational uses (Use Class D1); stadium-related uses (Use Class D2); showroom/brand centre (sui generis); and associated facilities including car parking, the construction of new and altered vehicle and pedestrian accesses, private open spaces, landscaping and related works", for variation of second floor plan to allow for proposed change of use from stadium-related uses (Use class D2); showroom/brand centre (sui generis), to Class D1 to form a new university technical college and associated minor alterations HGY/2015/0797: Approval of reserved matters relating to scale in respect of outline consent HGY/2011/2351 for the redevelopment of site to provide housing (Use Class C3) college (Use Class D1) and/or health centre (Use Class D1) and/or health club (Use Class D2) together with associated private and public open space, car parking, landscaping and related works; and altered footways, roads and vehicular accesses. Application under Section 73 of the Town and Country Planning Act 1990 for a minor material amendment to Planning Permission Reference HGY/2010/1000 granted on 21 September 2011 for: Demolition and comprehensive redevelopment of a stadium (Class D2) with hotel (Class C1), retail (Class A1 and/or A2 and/or A3 and/or A4 and/or A5), museum (Class D1) offices (Class B1) and housing (Class C3); together with associated facilities including the construction of new and altered roads, footways, public and private open spaces; landscaping and related works. Details of "appearance" and "scale" are reserved in relation to the proposed residential and hotel buildings. The minor material amendment being sought is a variation to Condition 1 (Approved Drawing Numbers) added by non-material amendment (Ref: HGY/2011/2200) to provide a new basement level beneath the approved stadium in order accommodate some of the already consented car parking spaces proposed at ground floor level, as well as plant and storage areas, and amendments to the consented ground floor	Granted (/1973): 31/03/2014 Granted (/1976): 31/03/2014 Pending Consultation End Date: 18/04/2015 Pending (/0964): Consultation End Date: 08/05/2015	
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		layout to allow for extended player changing facilities, enhanced media facilities and other associated stadium uses. No changes are proposed to the external appearance or the height, scale and mass of the consented stadium. The application also proposes removal of conditions: 1, 3, 5, 6, 7, 8, 11, 12, 13, 14, 15, 19, 24, 25, 26, 27, 28, 29, 31, 33, 34, 35, 36, 37, 38, 39, 43, 44, 45, 47, 48, 49, 60, 61, 62 and 63, and variations to conditions 2, 30, 54 and 58 of planning permission reference HGY/2010/1000.			
HGY/2010/1897 HGY/2010/1427 HGY/2010/1897 HGY/2015/0795 HGY/2015/0798	GLS Depot Ferry Lane London N17 9QQ	HGY/2010/1897 (<i>longer than 5 years ago</i>): Demolition of all structures and remediation for the development of a mixed use scheme comprising up to 1210 residential units (Use Class C3), student accommodation (C2), office (B1), hotel (C1), retail (A1, A2, A3, A4, A5 and B1) uses, a health centre (D1), a health club (D2), creche (D1) and a primary school, with provision for underground and on-street car parking, to be comprised within separate building blocks ranging in height from 1 to 18 storeys, incorporating public open space, an unculverted watercourse and Combined Heat and Power (CHP) with associated renewable energy systems (outline application). HGY/2010/1427: Erection of two 10-storey blocks (known as Pavilions 1 and 2) to provide 140 flats (70 flats in each block). HGY/2010/1897: Extension of time limit for implementation of outline planning permission HGY/2006/1177 granted 9th October 2007 for a mixed use redevelopment of the site comprising of demolition of all structures and remediation for the development of a mixed use scheme comprising up to 1210 residential units (Use Class C3), student accommodation (C2), office (B1), hotel (C1), retail (A1, A2, A3, A4, A5 and B1) uses, a health centre (D1), a health club (D2), creche (D1) and a primary school, with provision for underground and on-street car parking, to be comprised within separate building blocks ranging in height from 1 to 18 storeys, incorporating public open space, an unculverted watercourse and Combined Heat and Power (CHP) with associated renewable energy systems. HGY/2010/2090: Erection of a part 7, part 10 and part 12 storey building at Block NW2 of the Hale village master plan, to comprise student accommodation (524 bed spaces) and associated facilities including reception, office, plant room, store room, refuse store, cycle store, common room, laundry room, courtyard and associated works. HGY/2015/0795: Approval of reserved matters application (including appearance, layout, access, scale and landscaping) in relation to outline consent no HGY/2010/1897 for Plot SW forming part of the Hale Village Masterplan and discharge of conditions 1,4,5,6,7,8,11,12,15,41 and 42 attached to the outline consent. The development that is the subject of this reserved matters application comprises a nineteen storey building including 194 residential units, 1600 sqm of retail floorspace and associated works, the completion and laying out of basement	8	Granted (/1897): 09/10/2007 Granted (/1427): 03/05/2011 Granted (/1897): 29/03/2012 Granted (/2090): 16/02/2011 Pending (/0795): Consultation End Date: 29/05/2015 Pending (/0798): Consultation End Date: 29/05/2015	Townscape and Visual

		beneath plot. The original outline planning application was subject to an environmental impact assessment application and an environmental statement was submitted to the planning authority at that time (PLEASE NOTE THAT THIS LETTER IS ALSO CONSULTING YOU ON HGY/2015/0798). HGY/2015/0798: Application under Section 73 of the Town and Country Planning Act 1990 for a minor material amendment to Planning Permission Reference HGY/2010/1897 granted on 29 March 2012 for: Extension of time limit for implementation of outline planning permission HGY/2006/1177 granted 9th October 2007 for a mixed use redevelopment of the site comprising of demolition of all structures and remediation for the development of a mixed use scheme comprising up to 1210 residential units (Use Class C3), student accommodation (C2), office (B1), hotel (C1), retail (A1, A2, A3, A4, A5 and B1) uses, a health centre (D1), a health club (D2), a creche (S1) and a primary school, with provision for underground and on-street car parking, to be comprising within separate building blocks ranging in height from 1 to 18 storeys, incorporating public open space, an un-culverted watercourse and Combined Heat and Power (CHP) with associated renewable energy systems. The minor material amendment being sought is a variation to Condition 66 (Approved Drawing Numbers) added by non-material amendment (Ref: HGY/2015/0667) to omit the hotel use from Plot SW entirely. The amended parameter plans therefore propose retail uses (Use Class A1, A2, A3, A4, A5) at ground floor only, with residential use (Use Class C3) on the upper floors.			
HGY/2011/0814	550 White Hart Lane Tottenham London N17 7RQ	Development comprising of construction of three industrial buildings accommodating a total of 13,251 sqm (142,629 sqft) of gross B1/B2/B8 employment floorspace and divided into six employment units, together with revised access and associated highway works, parking and sustainable urban drainage. HGY/2014/0055: Variation of Condition 8 (Deliveries, loading and unloading hours of operation) attached to planning permission HGY/2011/0814 to no deliveries to be loaded or unloaded in respect of units 1, 2a, 2b, 5b and 6 between the hours of 2100 and 0600 Monday to Saturday or after 1800 hours Saturday until 0600 hours the following Monday, no deliveries shall be loaded or unloaded in respect of units 3, 4 & 5a after 1800 hours Saturday until 0400 hours the following Monday.	9	Granted (0814): 26/10/2011 Granted (0055): 11/03/2014	-
HGY/2011/2302	Aldi Store Ltd 570-592 High Road Tottenham N17 9TA	Redevelopment of site comprising of single storey food store with 88 vehicle parking spaces, 4 disabled bays and 8 cycle parking spaces (Option B) (AMENDED PLANS RECEIVED)	11	Granted: 30/03/2012	Cultural Heritage
HGY/2012/0427	638 High Road London N17 0AA	Erection of 4 storey building (plus basement) to provide A1 retail use at ground and basement levels and 26 residential units at first, second and third floors.	12	Granted: 29/05/2012	Cultural Heritage and Townscape and Visual
HGY/2012/0563	7 Bruce Grove	Conversion of Grade II listed building to	13	Granted:	-

	London N17 6RA	provide 9 residential units and erection of a new building to the rear to accommodate 4 self contained flats.		16/08/2013	
HGY/2012/2128	Former Cannon Rubber Factory 881 High Road London N17 8EY	Comprehensive redevelopment of the Brook House (former Cannon Rubber Factory site), including the erection of a 22 storey building (plus a part top floor mezzanine) providing 100 residential units (use class C3) and 190 sqm of commercial floorspace (use class B1, D1 and D2), two buildings of 6 and 9 storeys respectively providing 101 residential units (use class C3) and a part 2/part 5 storey building comprising a 2.388 sqm 2 form entry primary school (use class D1) and 21 residential units (use class C3), together with associated car and cycle parking, refuse stores, highways, infrastructure, open space and landscaping works.	14	Granted: 07/02/2013	Air Quality, Cultural Heritage, Townscape and Visual, Noise and Traffic
HGY/2013/0155 HGY/2015/1098	2 Chesnut Road Tottenham London N17 9EN	HGY/2013/0155: Partial demolition of existing buildings, retaining existing historical facade, construction of student accommodation over 3 and 4 floors to provide 64 student rooms and amenities areas. HGY/2015/1098: Variation of condition 2 (approved plans) following grant of planning permission HGY/2013/0155 to change plans	15	Granted (/0155): 26/03/2013 Pending (/1098): Consultation end date: 21/05/2015	Air Quality, Noise and Transport
HGY/2013/0745	530-536 High Road London N17 9SX	Erection of 4 storey building comprising 3 commercial units at ground floor level and 16 residential units over first, second and third floor levels	16	Granted: 15/07/2013	Air Quality, Noise and Transport
HGY/2013/1792	Unit 11, Mowlem Trading Estate, Leeside Road and land fronting Watermead Way, London N17 0QJ	Demolition of Unit 11, Mowlem Trading Estate, resurfacing of trading estate service road, relocation of electricity substation and redevelopment of land fronting Watermead way in the form of a relocated builders' merchants (Use Class B8) and Industrial and Warehousing (Use Class B 1(c), B2 and B8) floorspace with repositioned access/egress to/from Leeside road. HGY/2014/1648: Variation of condition 2 (accordance with plans and specifications) attached to planning permission HGY/2013/1792 to regularise the condition with minor amendments to the Travis Perkins Unit A	17	Granted (/1: 13/12/2013 Granted (/1648):	-
HGY/2013/2465	Protheroe House Chesnut Road London N17 9EQ	Redevelopment of the site to provide a new four storey building housing 50 extra care residential units (Use Class C3) comprising a mix of 36 one bed and 14 two bed units with ancillary facilities for use by residents including dining area with catering kitchen, wellbeing centre, communal rooms and facilities, staff areas, storage, energy centre, disabled parking, cycle/buggy parking and associated landscaping including public space, communal gardens and roof terraces.	18	Granted: 04/04/2014	Air Quality, Noise and Transport
HGY/2013/2610	Tottenham Hale Station Station Road London N17 9LR	Works to extend the operational railway station at Tottenham Hale. Creation of a new station entrance, enlarged station concourse, improved access and a new access for all bridge. Extension of the existing footbridge to form a new station entrance from Hale Village, relocation of the station vent shaft and provision of a new station control facility, provision of retail units and associated works. Development involves the closure of the existing Ferry Lane subway.	19	Granted: 27/03/2014	-
HGY/2014/0498	Image House,	A 96 bed hotel (Class C1) including a 146sqm	20	Granted:	Air Quality, Noise and

	Station Road London N17 9LR	restaurant/bar, 3 disabled car parking spaces and 6 dedicated cycle spaces		13/05/2014	Transport
HGY/2014/1041	5 Bruce Grove London N17 6RA	Demolition of side and rear extensions. Conversion of part ground, first and second floors into four flats (3 x 1 bed and 1 x 2 bed). Erection of 10 Houses (8 x 3 bed and 2 x 4 bed) at the rear of the site with associated access road, parking spaces and landscaping.	21	Granted: 22/12/2014	Air Quality, Noise and Transport
HGY/2014/1080	Vacant land between 17 and 34 Pretoria Road London N17 8DX	Redevelopment of the site to provide a new four storey building housing 52 extra care residential units (Use Class C3) comprising a mix of 44 x 1 bed and 8 x 2 bed units with ancillary features for use by residents including restaurant, communal lounge, activity area, IT suite, staff areas, storage, energy centre, refuse/recycling area, vehicle parking (including disabled spaces), cycle/buggy parking and associated landscaping including communal gardens and balconies.	22	Granted: 16/09/2014	Air Quality, Noise and Transport

Northumberland Development Project

Sustainability Report

031627

30 July 2015

Revision 01

Revision	Description	Issued by	Date	Checked
00	Draft	EH	14/08/2015	
01	Amendments to initial comments	EH	28/08/2015	

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date **28/08/2015**

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date **28/08/15**

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Glossary

Term	Definition

1 Introduction

This Sustainability Strategy has been developed to support the planning application for the Project in Tottenham, North-East London. This statement describes the objectives and deliverables for the construction and operation of the project in order to communicate the measures implemented to ensure sustainable development.

Sustainable development in this context comprises of four main issues: environmental impact, social and community impact, economic and commercial impact, and the depletion of natural resources.

1.1 Site Description

The development of the scheme will see the regeneration of the existing Tottenham Hotspurs FC grounds within Tottenham. At present, the Project site is occupied by the existing football stadium, car parking areas, industrial units, and residential properties. The site area and the illustrative proposal can be seen in Figure 1-1 and comprises of:

- **Stadium (D)** - 61,000 seat capacity with suitability for 55,000 capacity music concert use
- **Hotel (D)** - 180 bed hotel with 49 residential flats
- **THFC Experience (D)** - Museum, retail, cinema and outdoor community spaces
- **Residential Towers (O)** - 585 dwellings and business / community uses at plinth level
- **Extreme Sports (O)** - Indoor diving and climbing facility
- **North-East Building (O)** - Community health centre



Figure 1-1 Illustrative image of the Project

The application is a hybrid application seeking part outline and part detailed planning permission (indicated above O=Outline, D= Detailed). The varying levels of detail submitted for approval are referenced throughout the document, as this has an impact on the level of detail and analysis present in this document.

1.2 Aims and vision

The Club is committed to playing a key role in the wider regeneration of the local area and the Northumberland Development Project has provided much strength to the development of the 20 year regeneration programme for Tottenham as led by Haringey Council. This programme sets out seven priorities for the area, based directly from feedback of the local community and businesses over the last few years. These are as listed below, with comments on how the NDP have contributed towards these aims:

Haringey Council Priority Areas	NDP contribution
World-class education and training	Phase 1 of the NDP is completed, with Lilywhite House now fully operational. This includes the Sainsbury's supermarket, on top of which is the new Tottenham University Technical College (TUTC) which has been accepting students since September 2014. TUTC was founded by the Club and Middlesex University and THFC was instrumental in bringing the university to Tottenham, in order to create further education and training opportunities for young people across North London
Improved access to jobs and business opportunities	In the first phase of the NDP, over 400 new jobs and 100 new apprenticeships were created onsite and around the Borough. This figure is expected to increase significantly with the Stadium and Southern Development. Local businesses will benefit from the increased capacity of the stadium, and through the investment that the new hotel, residential blocks, THFC experience and extreme sports building will bring.
A different kind of housing market	The residential towers will cater towards demands at a range of prices and tenures, with the creation of 585 new homes, a portion of which will be affordable housing.
A fully connected community with even better transport links	The promotion of NDP as a Public Transport Destination has encouraged further investment in improving the local transportation network and infrastructure, more of which is detailed in Section 9.2.
A strong and healthy community	The inclusion of a healthcare centre will help meet the increased need in Tottenham for improved healthcare facilities. The public realm spaces of the development will also be designed to ensure a smooth integration of the development within the existing local community and provide additional open spaces for families and visitors.
Great places	The new development will encourage further investment in the local area and will provide a great space for the local communities and visitors alike with year-round attractions such as the Extreme Sports building. The THFC Experience also celebrates Tottenham's heritage by showcasing Warmington House as part of its design.
The right investment and quality development	There has already been significant investment for the regeneration of Tottenham, which has only been boosted by the planned NDP development.

1.3 Status of the Sustainability Statement

This Sustainability Statement is submitted to support the planning application. It summaries how the environmental sustainability objectives for the development will be delivered by a series of strategies addressing the various environmental issues. Some of these are addressed further in individual technical reports also submitted as supporting documents, which includes the Energy Strategy and Water Strategy.

2 Policy and Guidance

2.1 Key Policy Drivers

A range of legislative policies have been reviewed to identify the sustainability criteria which the Project must meet in order to be considered suitable for planning permissions. These included national policy, regional policy as defined by the Greater London Authority (GLA) and local policy as given by the London Borough of Haringey.

2.2 National Policy

2.2.1 Building Regulations Part L1A and Part L2A 2013

Part L of the 2013 Building Regulations refers to the Conservation of Fuel and Power in both new construction dwellings (Part L1A) and non-domestic buildings (Part L2A). These documents stipulate a minimum level of efficiency that buildings must be constructed to. The guide to the regulations (Approved Documents) must be read in conjunction with other supporting documents, such as the National Calculation Methodology (NCM) Modelling Guide 2013.

For non-domestic buildings, a Dynamic Simulation Model (DSMs) or a Simplified Building Energy Model (SBEM) is required using approved software. Outputs from these models will determine whether the design is compliant with the regulations. The same outputs are used to determine compliance with complementary policies, including the GLA London Plan.

It is important to recognise that these guides and methodologies define the *minimum* standards required to comply with the regulation. Planning policy requirements often stipulate performance above and beyond these requirements in support of Local Authority Sustainability and Climate Change aspirations.

To achieve this, the following measures are required:

- Enhanced thermal performance of the building fabric in terms of U-values and solar control
- Enhanced building fabric details to deliver an efficient air leakage rate
- Enhanced system efficiencies, including domestic hot water (DHW), ventilation system and lighting
- The consideration of on-site zero and low carbon technologies

2.3 Regional and Local Policies

There are two core governing bodies within the region of the development; these are the Greater London Authority and Haringey Council.

Both the GLA and Haringey Council have developed sustainability focused policies that set out requirements that must be met in terms of energy, water, waste, materials, air quality and landscaping. The GLA ambitions for sustainability development however, will supersede any requirements of the local council unless the local policy is more stringent.

2.3.1 Greater London Authority

The GLA is the governing body that takes responsibility for the welfare, development and prosperity of the City of London. Its role is to ensure the following:

- That there is equal opportunity for all

- That there is sustainable development
- To oversee the health and welfare of its population
- To adapt and be resilient to climate change
- To provide safe and secure environments

In order to deliver this, the GLA established a set of city wide overarching policies known as the London Plan, that unless otherwise exceed by the local council, are the strategic plan for the development of the city.

2.3.2 London Plan

The London Plan 2011 is the GLA's strategic planning and development plan for the city. The Plan sets out the ambitions and requirements for the city's development in terms of economic, social and environmental progression until 2036. The objective is for the boroughs to integrate their own local plans within the requirement of the overarching London Plan, thereby ensuring that continued sustainable development can occur that best promotes good practice across the city.

There are several key drivers which are specific to the Sustainability Strategy of the Project. These set out the requirements that must be met in terms of energy, water, waste and landscaping and are summarised in the following table.

Table 2-1 Key sustainability requirements of the London Plan

Area	Policy	Requirements
Energy	5.2 Minimising CO2 Emissions	Developments should achieve a carbon emission improvement of 35% on Part L 2013 Building Regulations, or as per Building Regulations requirements after 2016
	5.3 Sustainable Design and Construction	Developments must demonstrate that sustainable design standards are integral to the proposal and is applicable to the design, construction and operation stage of this project. Further guidance in the Mayor's Supplementary Planning Guidance (SPG)
	5.6 Decentralised Energy in Development Proposal	Development should evaluate the feasibility of decentralised energy networks including Combined Heat and Power (CHP) systems
	5.7 Renewable Energy	Seek to reduce emissions in line with Policy 5.2 via use of onsite renewable energy options. There is a presumption that all major development proposals will seek to reduce carbon emissions by at least 20% through renewable energy where feasible
	5.9 Overheating and Cooling	Developments should demonstrate how the proposal will seek to minimise potential overheating and reliance on air conditioning systems
Water	5.14 Water Quality and Wastewater Infrastructure	Developments must ensure that adequate wastewater infrastructure capacity is available in tandem with development
	5.15 Water Use and Supplies	Developments should minimise use of mains water by incorporating water saving measures and ensuring residential developments meet the target of 105litres/head/day
Waste	5.16 Waste net self-sufficiency	Developments should ensure waste self-sufficiency by promoting waste management
	5.17 Waste Capacity	Developments should provide sufficient waste capacity with considerations to minimising waste, encouraging reuse and recycling and the full transport and environmental impact of the lifecycle of waste
	5.18 Construction, excavation and demolition waste	Development are to recycle construction, excavation and demolition waste, wherever practical
	5.19 Hazardous waste	Developments must identify sites for the temporary storage, treatment and remediation of contaminated soil and demolition waste

Materials	5.20 Aggregates	Developments should encourage the reuse and recycling of waste and aggregates with targets to achieve 95% recycling/reuse of construction, demolition and excavation waste by 2020 and 80% recycling of that waste as aggregates by 2020
Landscape	5.10 Urban Greening	Developments should integrated green infrastructure from the early design stages; this includes tree planting, green roofs and soft landscaping
	5.11 Green Roofs	Developments should be designed to include roof, wall and site planting, especially where green roofs and walls are feasible
	5.12 Flood Risk Management	Developments must comply with the flood risk assessment and management requirements over the lifetime of the development
	5.13 Sustainable Drainage	Developments should utilise sustainable urban drainage systems (SUDS) and a site-wide surface water run-off strategy
	5.21 Contaminated Land	Enable the reuse of contaminated and brownfield land where possible

2.3.3 London Borough of Haringey

Haringey Local Plan: Strategic Policies sets out their vision and key policies for the Borough up to 2026 and are consistent and in general conformity with the GLA's London Plan. There are two chapters of relevance to the Sustainability Strategy, *Chapter 04 An Environmentally Sustainable Future* and *Chapter 06 Safer for All*. The key policies in these chapters are summarised below:

2.3.3.1 SP4: Working towards a low carbon Haringey

This sets out requirements for all developments to assess the viability of connecting to existing heating and cooling networks, provision of site wide CHP, and communal heating and cooling systems. This is in line the GLA London Plan expectations and should follow the same energy hierarchy. The Local Plan also specifies a 20% reduction in carbon emissions from onsite renewable energy regeneration, which can include connections to local sources of decentralised renewable energy.

- Non-residential developments are expected to be design and built to a minimum BREEAM 'Very Good' with aims to achieve BREEAM 'Excellent'.
- All new residential buildings are to achieve a minimum 25% reduced in total regulated CO₂ emissions or be zero carbon from 2016.

It is understood that Haringey's policies were drawn up in line with the UK Zero Carbon Buildings Policy. As of July 2015, it was confirmed in the Productivity Plan that the government is dropping the Zero Carbon Buildings Policy first announced in 2007. This means that the 2016 zero carbon homes target and the 2019 non-domestic zero carbon buildings target have both been withdrawn. Consequently, until further confirmation from Haringey Council, it is not certain whether the local policy will take precedent over the Government Productivity Plan.

2.3.3.2 SP5: Water Management and Flooding

This sets out requirements for all developments to be water efficient during construction and operation. The scheme should also seek to reduce all forms of flood risk and improve the water environment, quality and drainage systems.

2.3.3.3 SP6: Waste and Recycling

This policy aligns with the Mayor's London Plan on waste and recycling; developments are expected to maximise self-sufficiency in waste management capacity and should seek to minimise waste creation, whilst increasing recycling rates in relation to commercial, industrial and municipal waste. The waste strategy should follow the Mayor's waste hierarchy.

2.3.3.4 SP11: Design

This strategic policy outlines requirements for development to be of the highest standard of design, whilst respecting its local context, character and local historic significance. The scheme must demonstrate that impacts on health, climate change, natural resources and biodiversity are minimised by adopting and improving sustainable design and construction techniques.

2.3.3.5 SP13: Open Space and Biodiversity

Developments must protect and enhance Haringey's parks and open spaces and should seek to secure opportunities for additional publicly accessible open spaces. The scheme must also contribute towards the protection, management and enhancement of ecological habitats and where possible include green roofs, rainwater harvesting and bird roosting opportunities. Lastly, developments are also encouraged to provide provisions for children play areas.

2.4 BREEAM

Building Research Environmental Assessment Methodology (BREEAM) is a widely accepted benchmark system that is used to rate a building and development in relation to its environmental sustainability and performance. Schemes are granted credits for passing certain criteria and the overall score will provide the project with a rating of *Outstanding*, *Excellent*, *Very Good*, *Good* or *Pass*.

As previously stated, the London Borough of Haringey requires all non-residential developments to achieve a minimum *Very Good* rating with aspirations for *Excellent*. The preliminary BREEAM assessments for the development can be found in Appendix A. These assessments show that the buildings are meeting the council's target requirements.

2.5 Code for Sustainable Homes

The Code for Sustainable Homes (CfSH) policy was withdrawn on March 2015 and thus is no longer applicable. Previously, Haringey required developments to achieve a minimum of Code Level 4. As such, this Sustainability Strategy has been developed with consideration to the sustainable benchmarks associated with this level. Please see Section 10 for further information.

2.6 Incentives

2.6.1 Feed in Tariffs

The Feed in Tariff (FIT) and Renewable Heat Incentive (RHI) subsidies for renewable technologies make sustainable electricity and heat generation much more financially viable than they would otherwise be. The FIT was developed to encourage the deployment of small scale low carbon energy generation technologies, particularly by organisations, businesses, communities and individuals. The latest FIT tariff rates were published in January 2015.

As of July 2015, it was announced by the Department of Energy and Climate Change (DECC) that they will carry out a full review of the Feed in Tariff scheme and will consult on a full package of cost control measures in due course.

2.7 Corporate Social Responsibility

Social, environment and economic sustainability and responsibility are becoming more important to governing institutions and to the general public. As a recognised and publically focussed organisation, THFC has a responsibility to take a holistic view on sustainability and its benefits. This development provides THFC the opportunity to become a leader in sustainable and low carbon sporting design in the region. The community focussed buildings of the scheme also provides THFC the ability to further enhance the wellbeing of the local community by engaging with and providing facilities for residents and visitors alike.

2.8 Summary of Key Drivers

The following table highlights the most stringent requirements for the project in relation to the following sustainability themes:

Energy and Carbon	Water	Material	Waste	BREEAM
London Plan Policy 5.2	BREEAM	London Plan	London Plan Policy 5.16	Haringey Council
Developments should achieve a carbon emission improvement of 35% on Part L 2013 Building Regulations	Achieve a 25-40% reduction in water consumption against baseline levels	Materials should have a low embodied energy, including those that can be reused intact or recycled and should be sustainably sourced	Achieve 95% recycling or reuse of construction, excavation and demolition (CE&D) waste of 95% by 2020	All major non-domestic developments must achieve at least BREEAM rating of 'Very Good'

3 Energy

3.1 Introduction

This section presents a summary of the proposed energy strategy and measures taken to minimise carbon dioxide emissions of the Project. A full detailed assessment and strategy can be found in the accompanying Energy Statement.

3.2 Key targets

There are a number of key drivers for the implementation of a low carbon and energy efficient developments. These are covered in more detailed in the accompanying Energy Statement but as shown in Section 3.0, range from compliance with policy to whole-life cost reductions and wider stakeholder benefits. In setting minimum standards, the following policy targets have been identified in line with the GLA and Haringey Council Planning Policy:

Table 3-1 Key energy drivers

Policy	Requirements
London Plan 5.2 Minimising CO2 Emissions	Developments should achieve a carbon emission improvement of 35% on Part L 2013 Building Regulations, or as per Building Regulations requirements after 2016
London Plan 5.3 Sustainable Design and Construction	Developments must demonstrate that sustainable design standards are integral to the proposal and is applicable to the design, construction and operation stage of this project.
London Plan 5.6 Decentralised Energy in Development Proposal	Development should evaluate the feasibility of decentralised energy networks including Combined Heat and Power (CHP) systems
London Plan 5.9 Overheating and Cooling	Developments should demonstrate how the proposal will seek to minimise potential overheating and reliance on air conditioning systems
Haringey Local Plan SP4: Working towards a low carbon Haringey	Development should achieve 20% reduction in carbon emissions from onsite renewable energy regeneration. Residential should achieve a minimum of 25% reduction in regulation CO2 emissions.

3.3 Strategy

In accordance with the London Plan and the London Borough of Haringey Planning Guidance, energy efficiency of the development has been achieved through following the energy hierarchy.

The approach aims to minimise energy consumption from the outset through the use of low energy, passive measures and efficiency systems before the deployment of low and zero carbon technologies.



Figure 3-1 Energy hierarchy schematic

This approach aims to minimise energy consumption from the outset from the use of the low energy, passive measures and efficient systems before the deployment of low carbon and renewable energy technologies. The key components of the strategy as described as follows while a full detailed description can be found in the Energy Statement which accompanies this document. This includes the renewable and low carbon energy assessment and Part L energy modelling results.

3.4 Summary of key results

Each stage of the energy hierarchy has been followed to deliver the greatest amount of carbon emissions for the separate developments on site. Reference should be made to the separate Energy Strategy for details of predicted carbon emissions and the overall energy strategy for the development.

4 Water Strategy

4.1 Introduction

This section describes the proposed approach for water resource management for the Project. The water strategy should be integrated with all other systems as far as possible. The approach will be based on the premise that water is a critical resource, and should be valued as such; the efficient use of water can minimise stress on traditional supplies and reduce the associated energy consumption and carbon emissions from mains water treatment and supply.

4.2 Water Hierarchy

The proposed water strategy shall follow a hierarchical structure to minimise the potential impacts of the development on the local natural resources and existing infrastructure. The approach taken is to reduce water demand as far as possible at source, before considering efficient fixtures and fittings, efficient distribution and alternative sources for lower grade uses. Importantly, given the nature of the site, the strategy will also tie in with a site-wide sustainable drainage strategy which incorporates the use of sustainable drainage systems (SUDS), as prescribed by The London Plan, Policy 5.13.

The water resource strategy shall also incorporate resilience and robustness, to ensure longevity and minimise risk; both to the physical systems and to the site occupants and visitors Figure 4-1. describes the water hierarchy that will be proposed.

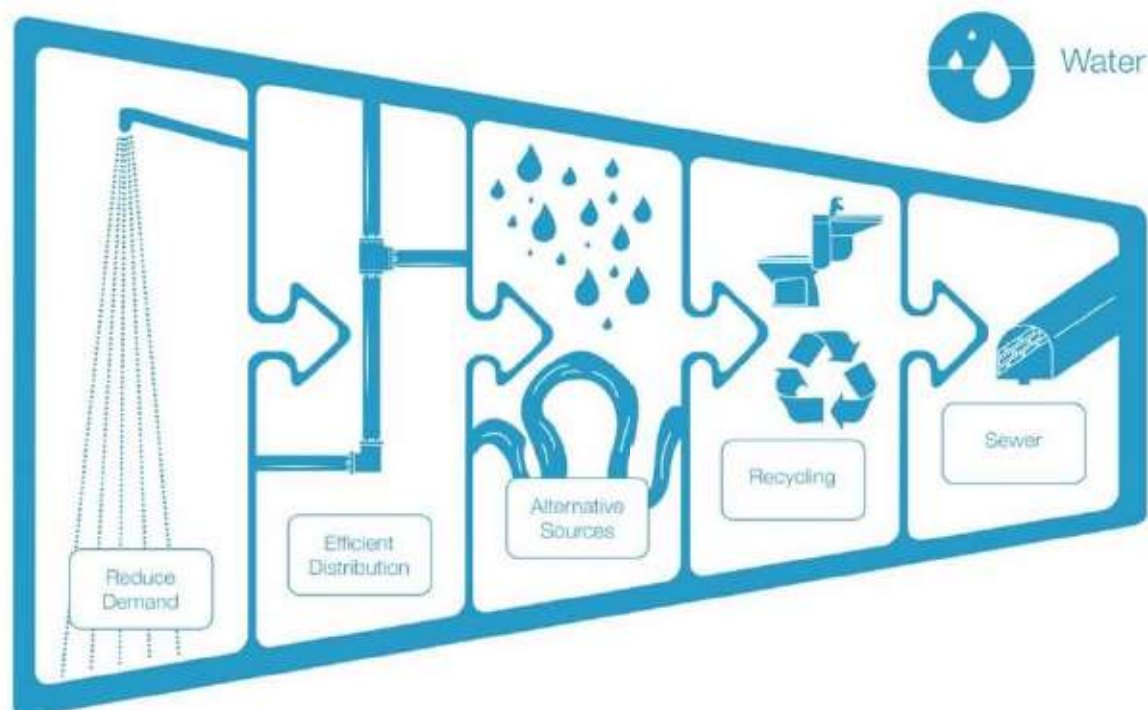


Figure 4-1 Water hierarchy

4.3 Key drivers

The water strategy at NDP will be influenced by a range of drivers, those outlined as part of the hierarchical strategy but also those from external sources. Key drivers are as follows:

- To ensure efficient resource use and demand.
- To align with key targets and policy, including the London Plan, for site water use management.
- To enable the attainment of credits for BREEAM 'Very Good' rating.
- To reduce the demand for potable water use for landscape.
- To minimise risk of flooding through use of SUDS particularly in critical drainage areas.
- To ensure whole life cost savings associated with efficient water resource system design and operation are outlined and achieved.

4.4 Key targets and policies

The water strategy adopted will seek to meet key targets and policies as outlined earlier in Section 3.0. Key targets are as summarised in the following table.

Table 4-1 Key water targets

Policy	Requirements
BREEAM Wat 01	A minimum 25-40% improvement in water consumption across the site to align with current industry standards and to contribute to the attainment of BREEAM <i>Very Good</i> rating
BREEAM Wat 02	To ensure water consumption is monitored and managed effectively
London Plan Policy 5.12 Flood Risk Management	Developments must comply with the flood risk assessment and management requirements over the lifetime of the development
London Plan Policy 5.13 Sustainable Drainage	Developments should utilise sustainable urban drainage systems (SUDS) and a site-wide surface water run-off strategy
London Plan Policy 5.14 Water Quality and Wastewater Infrastructure	Developments must ensure that adequate wastewater infrastructure capacity is available in tandem with development
London Plan Policy 5.15 Water Use and Supplies	Developments should minimise use of mains water by incorporating water saving measures and ensuring residential developments meet the target of 105litres/head/day

4.5 Reducing Water Demand

4.5.1 Improved Efficiency at Point of Use

Water efficient fixtures and fittings can help reduce site water consumption and demands on waste water services. These represent passive measures and require no behavioural changes by the end users.

Residential properties were assessed in accordance with the London Plan and will be designed such that it meets the mains water consumption target of 105 litres of less per head per day.

With regards to the non-residential buildings, Haringey Council requires a BREEAM rating of 'Very Good' to be achieved. This can be translated to give guidance on water reduction levels required to meet this level. Please note that these flow requirements are only used as general guidance and are subject to amendment following client-expressed preferences for specific fixture types in some areas of the development. The combined water strategy will take this into consideration while still aiming to meet BREEAM requirements.

Table 4-2 Guidance on water reduction levels

	Baseline	BREEAM WAT01 – for 3/5 credits	Current Scheme Proposal
WC	6 l/flush	4 l/flush	2.6/4 l/flush
Wash hand basin taps	12l/min	4.5l/min	3.2l/min
Showers	14l/min	6l/min	9l/min
Baths	200l	140l	80l
Urinals (2 or more)	7.5l/bowl/hr	1.5l/bowl/hr	Waterless
Urinals (1 only)	10l/bowl/hr	2l/bowl/hr	Waterless
Domestic sized dishwashers	17l/cycle	12l/cycle	10l/cycle
Domestic sized washing machines	90l/cycle	40l/cycle	39l/cycle

As indicated, the NDP proposes to use water efficient fittings that are overall, significantly more effective than the guidance given by BREEAM.

4.5.2 Increase system efficiency

Improvements in the design and distribution of the water system can reduce leakages and losses across site. Intelligent design that reduces the number of dead legs and minimises overall distribution lengths shall be sought, whilst additional features such as flow restrictors and pressure reducing valves will be considered. The use of metering for all substantial uses and leak detection linked to a Building Management System (BMS) will be encouraged to enable close monitoring and management of water use. This will also contribute towards gaining BREEAM credits.

4.6 Rainwater Harvesting

Rainwater is considered as a relatively clean water source, needing only minimal treatment before use in non-potable water schemes. The use of onsite rainwater harvesting can help reduce the developments demands on the mains water supply and can minimise stress on site drainage systems.

The quantities of rainwater available for use depends on the collection area, surface, filter efficiency and average rainfall. As the graph below illustrates however, rainfall is not a steady daily supply and thus storage vessels required will have to be sized to hold weeks or months of rainwater at a time to meet continual daily demands. All rainwater storage will also require a mains water back up supply to accommodate periods of low rainfall.

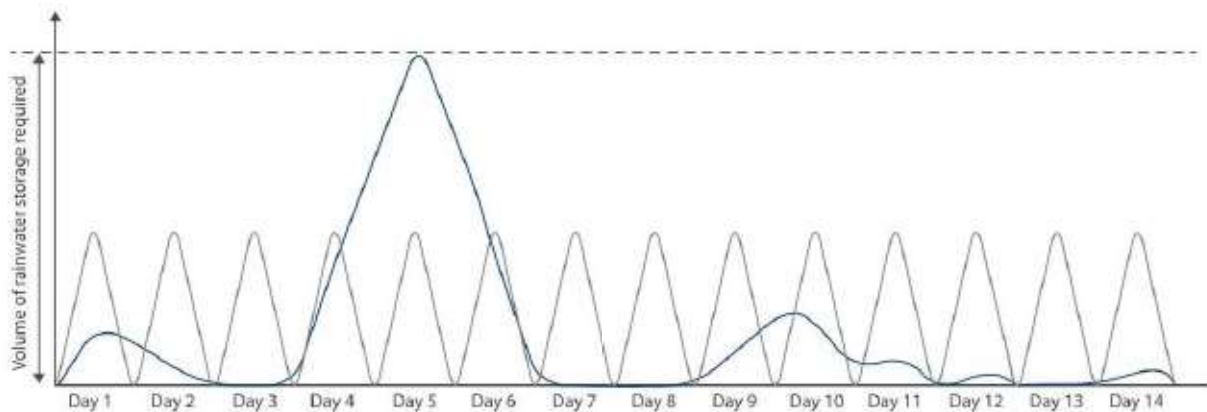


Figure 4-2 Rainwater harvesting

Whilst the Stadium roof presents an opportunity for rainwater harvesting, the Pitch Specialises were not prepared to use harvested rainwater for pitch irrigation and the use of waterless urinals on all General Admission areas reduces the application of harvested rainwater.

With regards to the Southern Development, there is limited space for rainwater harvesting or greywater recycling due to the considerable amount of additional pipework and thus they are not included in the scheme.

4.7 Drainage

The site currently drains to separate surface water and foul sewers. The development will maintain the separation and connect into these networks. Local network upgrades will be made on Worcester Avenue with the addition of a new sewer. This is important in terms of managing the impact of the increase in discharge as a result of the increase in stadium capacity. The installation of water efficient fittings will further minimise the increase in discharge volume.

The surface water drainage of the site will aim to improve the existing situation through the introduction of SUDS across the site. This will provide attenuation of storm water to reduce the flood risk to the downstream catchments as well as to the development itself. Reference should be made to the separate Water Strategy for further details.

The foul drainage of the development will connect into the existing network and upgrades will be provided to ensure that the systems do not back up and avoid exceeding existing network capacity. The Stadium will drain into the High Road sewer to the west, the hotel and residential development to the South to Park Lane. The foul water drainage strategy will require a pumped system and has been approved in principle by TWUL.

4.8 Flood Risk

The site is located in EA Flood Zone 1, which means that the probability of fluvial and tidal flooding in any one year is less than or equal to 0.1%. The National Planning Policy Framework requires that developments in Flood Zone 1 do not increase flood risk to the development or elsewhere through the addition of hard surfaces and increase in surface water run-off.

The provision of surface water attenuation will significantly reduce the risk of surface water flooding for the site. A controlled discharge rate from the underground storage tanks will also reduce the risk of the development surcharging the surface water drainage network and impacting on third parties.

5 Waste

5.1 Introduction

The management of solid waste is an important element to consider as buildings are designed. Planning for future operational waste management ensures that a building will be able to operate efficiently and sustainably while minimising the impacts on the designed requirements building performance and site users. Good waste management will be essential ensure safe operational practice throughout the development.

5.2 Waste hierarchy

The waste management strategy must ensure that the stadium, hotel and residential towers Facilities Management (FM) teams can collect, store, recycle, re-use and dispose of waste quickly and efficiently and in a discreet manner in line with THFC Waste Management Policy and the waste hierarchy as shown in Figure 5-1. Waste management operations will need to be hidden from visitors and residents to ensure that they do not interfere with the day to day operations within the hotel and residential towers.



Figure 5-1 Waste hierarchy

- 01** Minimise the amount of waste produced and avoid producing waste in the first instance
- 02** Re-use items as many times as possible
- 03** Recycle what you can once you have re-used it and it is no longer able to be used or is no longer needed
- 04** Turn waste materials into a new product where possible i.e. the generation of waste from energy
- 05** Dispose of what is unable to be recovered in a responsible way

5.3 Key targets and policies

During the construction of NDP, the management plan will seek to meet all construction waste related targets and policies outlines in the sustainability section of section. Key targets are summarised below.

Policy	Requirements
BREEAM Wst 01	To promote the efficient, effective management and reduction of construction waste by measuring the total construction waste generated per 100m ² per gross internal floor area and by diverting

	waste to landfill.
BREEAM Wst 02	To recognise and encourage the use of recycled and secondary aggregates in construction, thereby reducing the demand for virgin materials and optimising the use of materials during the design and construction process.
London Plan Policy 5.16 Waste net self-sufficiency	Developments should ensure waste self-sufficiency by promoting waste management
London Plan Policy 5.17 Waste capacity	Developments should provide sufficient waste capacity with considerations to minimising waste, encouraging reuse and recycling and the full transport and environmental impact of the lifecycle of waste
London Plan Policy 5.18 Construction, excavation and demolition waste	Development are to recycle construction, excavation and demolition waste, wherever practical
London Plan Policy 5.19 Hazardous Waste	Developments must identify sites for the temporary storage, treatment and remediation of contaminated soil and demolition waste
London Plan Policy 5.20 Aggregates	Developments should encourage the reuse and recycling of waste and aggregates with targets to achieve 95% recycling/reuse of construction, demolition and excavation waste by 2020 and 80% recycling of that waste as aggregates by 2020

5.4 Key drivers

THFC is committed to manage its waste in line with the waste hierarchy, as shown in Figure 5-1, and other relevant national and local legislation and guidance. The client recognises that in order for the buildings to operate in a productive and efficient manner good waste management is required. A meeting with THFC staff and the design team was held on 12th February 2015 to discuss the preliminary waste management aims and aspirations.

THFC have produced a Waste Management Policy to ensure that all waste generated is disposed of safely and efficiently to ensure good waste management. This document is principally focussed on the stadium although some of the key objectives and principles are relevant to the hotel and residential towers. The key principles and aims and aspirations for the Stadium, hotel and residential developments are summarised below:

5.4.1 Overarching

- Waste is to be managed in line with the waste hierarchy with zero waste sent to landfill;
- Encourage waste minimisation and promote recycling and re-use with a minimum of 50% recycling aiming to target 60% recycling and composting by 2020 in line with London Major and LBH targets;
- Provide appropriate storage facilities for recyclables, organic (food) and residual wastes; and
- Provision for other wastes including hazardous waste, confidential waste, bulky waste and Waste Electrical and Electronic Equipment (WEEE) should be made available as appropriate;
- Where possible bulk waste on site prior to collection (i.e. compacting) to reduce the volume of waste;
- Keep back of house and public realm areas segregated in terms of waste as far as possible to ensure waste management operations are discreet from residents, guests and visitors;
- Raise awareness of waste management issues by offering waste management training to all staff

5.4.2 Further drivers – Stadium

THFC Waste Management Policy (dated January 2015)

- Provide designated waste receptacles throughout the stadium to encourage waste segregation at source as far as practicable (i.e. in offices, hospitality and food outlets, kitchens, general concourse areas, player and media facilities and the THFC experience). All waste receptacles must be clearly marked;
- Waste will be collected at regular intervals and where possible, waste will be processed on site prior to collection (i.e. compacting and baling of recyclables) to reduce the volume of waste generated;
- It will be the overall responsibility of the Operations Director to ensure that waste is managed successfully throughout the stadium.

THFC Employer's Requirements (dated August 2014)

- Waste receptacles are to be located adjacent to catering units at lower concourse level only (Level 1) and be sufficient size to contain two 1100 litre wheeled bins;
- Waste is to be cleared immediately after half time and at full time to waste rooms and held temporarily at the main concourse levels (Levels 1 and 5) and transported to the waste and recycling area by lift;
- A minimum of 15m² of waste store space on each general admission level should be allocated. Bagged waste may be stored on the floors and wash down facilities are required. Provision for charging of electric vehicles (EVs) to enable servicing;
- Waste produced in food outlets within the general concourse and hospitality areas will be stored until after the event. It will then be removed to the waste area by lift. All rubbish will be segregated prior to being removed; and
- The requirements for a compactor area will be a minimum of 180m². This must accommodate at least two compactors and skips (for residual and recyclable wastes) with an associated wash down area. A minimum of 5.5m of headroom should be allocated.

5.4.3 Further drivers – Hotel

- Develop productive and efficient waste management practice to ensure the new developments are leading examples of excellent waste management within the hotel sector;
- Assess opportunities for packaging reductions, reuse or recovery, but in a manner that does not negate need to reduce waste volumes;
- Raise awareness of waste management issues by offering waste management training to all staff; and
- Undertake a high level waste audit on an annual basis to track the quantities of residual waste, organics and recyclables that are produced. On a three yearly basis this will be supplemented with a full audit of waste arising's. This will enable the hotel to monitor their performance against targets as well as identify opportunities for improving operational and cost efficiency..

5.5 Operational Waste Management Plan

5.5.1 Segregation

THFC will segregate waste at source (i.e. in the offices, hospitality and food outlets, kitchens, general concourse areas, player and media facilities, public square and within the THFC experience) into the following four main streams: residual waste, mixed recyclables (glass, paper, cardboard and plastics), organic waste (food and landscaping waste) and other waste as outlined in Figure 5-2. The 'other' waste stream is anticipated to include clinical and hazardous wastes, confidential waste, bulky and WEEE wastes which will arise in small quantities.



Figure 5-2 Segregation of waste and recyclables within the Stadium

Within the hotel the following four main streams will be segregated: residual waste, mixed recyclables (paper, cardboard and plastics), glass and organic waste (food) as outlined in Figure 5-3.



Figure 5-3 Segregation of waste and recyclables within the Hotel