This Master Plan provides the framework for the urban redevelopment of the site (Figure 6-1). It establishes its street network, building locations and primary public spaces. Key components of the Master Plan are discussed in this section. The implementing Design Guidelines are contained in the following chapter.

The Master Plan provides guidance for development yet should be considered flexible in order to respond to changing development conditions over time. The important principles of the Master Plan are discussed below. The development objective should be the attainment of these principles and character should it be necessary to deviate from the Master Plan.

6.1 Streets Network and Development Parcels

The street system of the McMaster Innovation Park provides for site circulation and creates development parcels that will be the basis for a vibrant public realm in this new neighbourhood.

An enhanced Longwood Road will be the mainstreet of MIP and the focus for public activity. In addition to carrying four lanes of traffic, its edges will have a well designed streetscape and provide for transit, cycling, and pedestrian circulation along with on-street parking. It will have a mix of uses and be the commercial focus for MIP.

A series of local streets are created through a finely grained grid network connecting to Longwood Road and, in the long term, the adjacent West Hamilton Industrial Area to the east. The streets will be developed in an urban form to promote pedestrian activity with buildings oriented to the street. A series of guidelines and street sections have been prepared to illustrate the character and quality desired.

A series of building parcels have been created through the organization of the streets and public spaces. These parcels range in size and provide for building footprints ranging generally from 15,000 to 30,000 square feet. These parcels will be able to accommodate both research and academic buildings as well as the necessary supporting facilities.

6.2 Land Use and Built Form

The predominant activities in MIP will be research and academic facilities. The plan provides for approximately 1.6 million square feet of building space. Ancillary retail and service facilities should be located in close proximity to Longwood Road in order to support its desired mainstreet character. Hotel and conference facilities could be located on the east side of Longwood Road and in a manner which integrates and supports activities in the Park. The western location provides for highly visible development and landmark building opportunities along Highway 403 as desired by a variety of uses.

Buildings should be street oriented and located in close proximity to the street right-of-way. This strong streetscape definition and continuous street wall will provide for the desired pedestrian supportive street space.

Landmark building opportunities are provided along Highway 403. Development in this area should capitalize on the exposure and provide for striking and dramatic architectural form which can create regional landmarks. Development in these locations should not turn its back on Highway 403 but have attractive and active building elevations along both the Highway 403 frontage and the internal street frontage.

Buildings should display a modern technology oriented design expression. Excellence
Figure 6-2. View towards the new CANMET facility.

Figure 6-3. Open space character.
in building and site design will be required throughout.

Each building should have public entrances at grade on either Longwood Road or the local street network with the more active and public components of the building located at grade. Transparency in design is encouraged at grade in order to allow opportunity for people to experience science and technology in action.

A mid-rise built form is encouraged across the site. Specific building heights have not been prescribed but are encouraged to be in the 4-8 storey range. Additional building height is encouraged in landmark locations.

Guidelines have been prepared to assist in site and building design. These guidelines define building envelopes and edge conditions and identify areas where special treatments are required.

6.3 Open Space and Public Realm

The streetscape, infrastructure and open spaces of MIP will be key elements of establishing the character of the development as well as creating a high quality of life for employees. It is important that these facilities be well designed to achieve the development objectives for MIP. The primary components of the open space and public realm network are illustrated of Figure 6-2 and 6-3.

Gateways to the development are created at the north and south ends of Longwood Road. The northern gateway should be created immediately south of the bridge and along the west side of Longwood Road at the bend. This gateway can feature dramatic vertical elements along with softer plant materials. On the west side of Longwood, the stormwater management area provides an opportunity for naturalized plantings in conjunction with the slopes adjacent to Highway 403. On the east side of Longwood, opportunities are presented to develop terraced mass plantings which integrate with the Highway 403 right-of-way. In the longer term should the Longwood Road bridge be replaced or enhanced, there is a further opportunity to continue Hamilton’s history of strong civic design in its bridges and to integrate the Longwood Road bridge into a significant gateway feature.

The southern gateway at Aberdeen Avenue is more of a space people pass through as they enter Longwood Road. A vertical identification marker, similar to the northern gateway, can be integrated with a terraced planting area and MIP signage at this prominent intersection.

Longwood Road will have extensive streetscaping features including wider sidewalks with decorative banding, a strong single row of mature trees, pedestrian scale down-lighting, banners and ample street furniture. Transit stops and gathering spaces adjacent parks will be focal points along this street.

There will be three principal park spaces provided in MIP. At the north end, the first park to be developed will be between the existing Camco building and the new building to the south. This space will be for passive activities with extensive sitting space for meeting and lunch. It should have a mix of hard and soft landscape materials and could be animated by an adjacent coffee shop or similar type of facility.

The largest of the park spaces, The Commons, will be located in the centre part of MIP and extending in an east west direction from Longwood Road to the easterly local street. This linear park will be terraced in response to site grades and contain a terraced water feature and open lawn area. This park should have clean lines and a contemporary approach in providing open and unprogrammed space. Terracing provides opportunities to create a series of spaces and views through the park. In the long term, this park could be extended eastward through the redevelopment of adjacent properties.

The public open space directly to the south of 175 Longwood will be the public lobby of MIP. It should be designed with a sizable hard surface area as a multi-purpose space for adjacent restaurants, hotel and convention facility, auditoriums and other active facilities in the buildings which frame the space. Outdoor
seating areas, performance spaces, location for tents or marquis during major events, and other activities should be provided for in this space.

The retention or reuse of the power plant provides the opportunity to create a smaller public space adjacent to it, primarily for sitting and contemplation.

The stormwater management ponds should be designed to be interactive with MIP tenants. For example seating areas should be provided in close proximity to the water or perhaps walkways can cross water areas. Mass plantings and use of native plant materials are important design principles.

6.4 Sustainability and Energy Efficiency

Many sustainable design and green building principles have been incorporated into the Master Plan and should be incorporated into individual buildings. In keeping with current sustainable trends at McMaster it is recommended that the Master Plan establish two goals associated with the buildings:

1. Leadership in Energy and Environmental Design (LEED) - SILVER certification level as a minimum for new site development.

2. An energy efficiency level of 45% better than the Model National Energy Code for Buildings. It is hoped that some development will achieve a higher standard leading to the recognition that MIP is the most sustainable new development in Canada.

It should be noted that as the LEED program continues to evolve its requirements will become more stringent and change to reflect current market trends and technologies. Added to this are the unique design requirements of the anticipated building occupants that will result in a variety of strategies used to meet LEED requirements. Thus, providing specific strategies and requirements for obtaining LEED certification on new buildings would not be required. Rather, the Master Plan has provided suggestions intended to assist design teams in meeting the above noted goals.

These suggestions are listed below:

Sustainable Sites
Utilize best practice approaches to control soil erosion from the site during construction and avoid sedimentation of municipal sewer lines or local waterways. This is a LEED prerequisite and should include, at a minimum, a silt fence constructed around any disturbed areas, protection of sewer inlets and streams, methods for limiting soil loss from wind, water and construction traffic.

Buildings should be designed to provide a development density meeting LEED requirements. This can generally be provided by mid-rise buildings.

Alternative forms of transportation should be promoted on the site. These include taking advantage of existing or planned public transportation routes (HSR buses, university shuttles, GO bus routes), carpools, and hybrid vehicles. Above all else, provide adequate facilities (storage, shower & change rooms) to accommodate occupants interested in utilizing "human power" i.e., bicycles, running, walking, etc. to commute to, and around, the site.

Landscaping on the site should incorporate appropriate native and adaptive species of plants in order to reduce irrigation needs, pesticide & fertilization requirements and to promote a return to a more natural environment. Open space should provide for stormwater requirements on site, control the heat island effect generally associated with hard landscaped areas and provide a more hospitable environment to building occupants, drawing them outside where they can interact with colleagues and nature. Consideration should be given to technologies such as green roofs which help to manage stormwater and provide attractive alternatives to standard roofing products.

Finally, light pollution and excessive lighting should be avoided.

Water Efficiency
As a rule, any water falling on a building should be used inside that building. That is, rainwater
harvesting systems should be installed in all buildings added to the site. Alternatively, a central rainwater collection area (or multiple areas) could serve a number of buildings at MIP. Water from these systems should be used where non-potable water is sufficient i.e., sewage conveyance, process water, cooling towers, and floor washing.

Similarly, any water falling on the site should be collected and stored on site for re-use on the site. This could include a network of stormwater management ponds linked to site irrigation systems or fire protection systems. As site landscaping will utilize native and adaptive species of plants, it should require less irrigation than traditional institutional park vegetation. This will help to ensure that stormwater ponds, which also serve as landscaping features, will remain filled when aesthetics are paramount (i.e., warm weather).

Within the building bounds, water efficient fixtures should be provided. These include low flow lavatory faucets, showerheads, toilets and urinals, to name a few. Flow rates selected for new buildings should venture to be as low as is technologically feasible at the time of design. For instance, a well performing 0.5 gallon per minute shower head, or a 0.5 gallon per flush urinal would be the standard for specification in a building being designed at present.

Energy Efficiency
All new buildings being developed at MIP should consume 40% less energy than the Model National Energy Code for Buildings “Reference Building”. This is by no means an overly ambitious target, provided designers are willing to incorporate energy efficient alternatives. As a minimum, all new buildings should include:

- High efficiency lighting designs and equipment
- Heat recovery ventilators on all HVAC systems
- High efficiency heating, cooling and service hot water heating equipment
- Low-flow lavatories and showers with drainwater heat recovery where appropriate

All buildings at MIP should be commissioned according to ASHRAE and LEED guidelines and principles. This is not only a LEED requirement, but provides building owner with a surety that the building has been designed, constructed and left to operate as was originally intended.

Measurement and verification (M&V) of area are also important options to consider for new buildings. M&V provides an opportunity to bill tenants individually for their utility consumption and helps to flag any deficiencies in the operation of building equipment. M&V can also be linked to a central building control system to provide an overall estimate of the utility consumption of the MIP as a whole.

Finally, where deemed appropriate, the use of Renewable Energy Technologies (RETs) such as wind, photo-voltaic, and solar thermal energy should be encouraged. RETs provide clean, endless supplies of energy once installed with minimal operating costs. Incentive programs are provided by the Canadian Government to assist in the development of the RET market (i.e. Renewable Energy Deployment Initiative – REDI). RET installations may also result in research opportunities for MIP tenants.

If a central plant is investigated for site electricity and heat generation it should be limited to a combined heat and power (CHP) system. CHP systems provide electricity to site buildings through high efficiency combustion (e.g. Natural Gas). The waste heat from combustion is used in a secondary process to extract heat energy that can be used throughout the site when heat is required. A CHP system could be installed in an MIP central plant, however depending on the speed at which the
site is developed it is likely more economical to install a number of “block plants” that would serve surrounding buildings that develop around the plant. A like strategy could be employed if a Ground Source Heat Pump system was used to provide heating and cooling energy to site buildings. If CHP or GSHP systems are not to be employed, the most economical/efficient strategy for energy production would be to tie in to grid electricity and provide heat energy through high efficiency condensing boilers and radiant heating systems.

**Materials and Resources**
An intensive recycling program should be instituted at MIP. This includes adequate separation and storage areas in each building (or grouping of buildings) for items such as plastic, paper, metal and card board. Additionally, MIP tenants and facility staff should be provided proper training to ensure recycling policies and procedures are implemented properly.

During the construction of new buildings, a construction waste management plan should be developed and implemented to divert a minimum of 75% of generated construction waste from landfill.

In all building projects preference should be given to materials that are high in recycled and rapidly renewable material content and sourced from regional suppliers. When feasible, concrete products should be designed to incorporate supplementary cementing materials such as slag or fly-ash. Steel should be sourced from local suppliers and contain maximum quantities of recycled content. Flooring and mill-work products should be comprised of natural materials that have a growth cycle of less than 10 years. Any wood products required in construction should be Forestry Stewardship Council (FSC) certified.

**Indoor Environmental Quality**
Tenant and occupant comfort are the most important aspects of a sustainable building as they have the greatest impact on worker health and productivity (see Figure 6-4). As such, environmental quality should be a main focus for future design teams.

Ventilation strategies should include fresh air supplied at ASHRAE suggested levels and distributed throughout the building using a displacement ventilation system (i.e., supply cool air at a low level with a slow velocity). Ventilation air should be clean and free of particulate which can be achieved by prohibiting smoking in or around the building, and filtering building air with high efficiency (e.g. MERV 13) filters. Other IAQ measures that should be implemented include: IAQ management during construction, building IAQ testing prior to occupancy and the specification of low VOC building products (e.g. paints, coatings, carpet, adhesives, sealants and furniture).

Thermal comfort inside the building should be regulated and monitored by a building automation system (BAS). The system should provide for temperature monitoring and control, and at a minimum humidity monitoring (but not control). Using an Enthalpy Wheel for heat recovery will help to regulate building moisture levels and keep the indoor environment comfortable. Operable windows will also help occupants to feel comfortable in a thermal sense.

Plentiful daylighting and views of the outside are important aspects to consider when determining building programming and function. By maximizing the amount of daylight that is provided to regularly occupied spaces energy savings can be realized (through reductions in lighting levels) as can increases in worker productivity and academic performance.

**Other Sustainable Opportunities**
Other opportunities to consider for MIP include:

- Green Housekeeping: which limits site cleaning and maintenance products to environmentally friendly alternatives
- Green Education and Public Outreach: that will help to bring the community to the MIP and educate them regarding sustainable initiatives and MIP research

**Visibility**
Sustainability is one of the underlying principles of the MIP. It is not only important to maintain the principle in the development and operation
of the Park, but also to clearly and publically identify the site's sustainable commitment, objective and innovations. Highly visible 'green' technologies and signage as appropriate will help to achieve this goal. Some options include:

- Garden Roofs
- Renewable Energy Technologies like wind turbines and solar electricity
- Solar thermal energy generation or ground source heating.

6.5 Infrastructure and Utilities

Water service is provided to the site from the 500mm main under Longwood Road. A local distribution system will be created following the local street network.

The existing 250mm sanitary sewer at the north end of the site will be extended through development from north to south to service MIP.

6.6 Stormwater Management

The Ministry of Environment requires that stormwater quality measures be implemented for infill developments as per their 'Storm Management Planning and Design Manual', dated March 2003. Many alternatives exist for stormwater management including lot level, conveyance and end of pipe controls. The suitability of one method over another is determined based on many factors including site area, level of quality control required, site impervious ratio and soils conditions.

For industrial infill sites, alternatives for lot level and conveyance stormwater quantity and quality control include, but are not limited to: roof top storage; discharging roof water leaders to grassed, landscaped or bioretention areas; grassed, wet or infiltration swales; dry wells; infiltration trenches; filter/buffer strips; and cisterns. Alternatives for end of pipe controls include, but are not limited to: constructed wetlands; detention wet or dry ponds; and infiltration basins.

Figure 6-4. Atrium of the renovated 175 Longwood Avenue.
Often the best method of providing stormwater quantity and quality control for infill sites is to use a multi-component approach. For example, directing roof water drainage over bioretention areas in conjunction with grassed swales and filter strips will provide enhanced stormwater quantity and quality control than if only one of the three are employed.

Generally, the applicability of some of these options is limited by the native soil. Infiltration practices are better suited for sites with high permeable soils, although these practices can be designed with underdrain systems to encourage stormwater interception and storage.

Micromanagement techniques provide a ‘hydrologically functional landscape’ by first, understanding the dynamics and interrelationships of the natural hydrologic cycle and then designing the site development to preserve the natural hydrologic regime. These techniques are often called Integrated Management Practices.

Integrated Management Practices (IMP) are strategically placed, distributed lot level and conveyance controls, which are designed throughout the site to mimic the natural hydrologic functions of the watershed such as interception, depression storage and infiltration.

The use of at-source controls for stormwater is fundamental in any stormwater management plan. The integration of stormwater management techniques on a site-specific basis will assist in achieving the overall water quality goals of the Chedoke Creek Watershed. A distributed, at-source stormwater management strategy for the McMaster Innovation Park, to control stormwater quality and quantity, can be accomplished through micromanagement techniques throughout the site. The following describes the integration of stormwater management techniques for the McMaster Innovation Park:

• Vegetated building roof tops (i.e. ‘Green roofs’) may be implemented throughout the site. Green roof tops enhance the hydrologic regime by providing increased interception, evaporation and storage of stormwater. This technique greatly reduces the ‘heat island’ effect of urban areas.

• All proposed buildings may discharge roof leaders to grass, landscaped or bioretention areas. Roof leader discharge to vegetated areas will minimize the potential of downstream flooding by reducing peak flows and volumes, thereby improving the overall hydrologic regime by promoting natural infiltration.

• Rainwater harvesting, such as rain collection via cisterns should be implemented to reduce the impact of increased stormwater runoff to Chedoke Creek. This practice increases the potential to re-use rainwater for irrigation of landscaped areas and for grey water plumbing.

• Vegetated buffer or filter strips and bioretention areas should be designed throughout the site. Stormwater runoff from buildings and parking areas may be directed to these stormwater management features, thereby increasing the infiltration potential of the site and providing additional storage of stormwater runoff. Quality of stormwater is enhanced through plant uptake and filtration.

• Naturalized buffer strips will be constructed between the development site and the tributaries of the Chedoke Creek to restore and preserve the existing riparian environment. Existing slopes along the east tributary of the Chedoke Creek can be stabilized which will provide a restored creek buffer in a park like setting.

• An end of pipe facility to provide additional stormwater quantity and quality is proposed to be located adjacent to the east and west tributaries of the Chedoke Creek. Stormwater runoff from the site will be treated at this facility. Urban stormwater generally contains elevated levels of pollutants, thereby the facility shall be designed to provide 60% total suspended solids removal and 40% total phosphorus removal.
A detailed stormwater management strategy will be prepared to refine these techniques and establish targets prior to site construction.

6.7 Transportation System and Parking

6.7.1 A Transportation Strategy

The long term success of the MIP will require an efficient transportation system that facilitates the movement of people, goods and services to and from the site. The need for efficient transportation will be driven by the anticipated activities that will be located on this site, including a wide variety of research and development businesses, post-secondary educational activities and various related support services. The research and teaching facilities as well as the support services will generate daily employee and visitor trips as well the delivery and pickup of goods and services.

At this Master Plan stage, it is difficult to determine the specific nature of these transportation needs at different stages of development with certainty given that the pace of development cannot be predicted. However, it is important that provision be made to accommodate the MIP transportation needs as development proceeds and that an ongoing planning process is in place to manage the implementation of improvements as required.

6.7.2 Transportation System Concepts of MIP

*Longwood Road as a “Main Street”*

Longwood Road will not only provide the primary transportation route to and from the site but it will also be the most commonly viewed public face of the MIP. Therefore, it is important that this road corridor is not only designed to accommodate the expected transportation demands but that it also have a design that enhances the image of the MIP and promotes alternative modes to travel.

The functional requirements for Longwood Road are broad. The corridor should accommodate four (4) through traffic lanes to meet both the existing and future peak traffic demands. The intersections of Longwood Road with Main Street West and with Aberdeen Avenue are currently configured for 4 lanes on Longwood Road and the structure crossing Highway 403 is limited to 4 traffic lanes. Preliminary estimates of future travel demand also indicate that 4 through lanes can accommodate the anticipated future traffic volumes.

Provision should be made in the Longwood Road corridor for auxiliary turning lanes at the signalized intersections. Auxiliary turning lanes will be required at the adjacent intersections at Main Street West and at Aberdeen Avenue. It is also anticipated that auxiliary turning lanes will be required at the main access to the MIP site. Direct vehicular access to and from development parcels within the MIP site should be provided from internal roadways rather than Longwood Road.

Longwood Road should make provision for public transit service operation in both directions. An existing bus route operates along Longwood Road and service improvements are likely in future to serve the MIP site. The provisions for public transit should include bus stop areas in each direction at appropriate locations to best serve transit customers as well as appropriate transit customer amenities at each bus stop. A direct route to and from the main McMaster Campus would be an important asset.

Wide sidewalks and pedestrian facilities should be provided along both sides of Longwood Road to provide a safe and convenient pedestrian environment. These facilities should have convenient connections to the internal pedestrian circulation network as well as to the bus stops.

Separate bike lanes should be provided in each direction along Longwood Road through the MIP site. This will not only improve the cycling environment for cyclists passing through the area but it will encourage cycling by persons on the MIP site.

On-street parking in auxiliary parking lanes on specific sections of Longwood Road should
be considered to enhance the “main street” appearance of Longwood Road. On-street parking can also provide convenient short-term parking for visitors to the site who are not familiar with the internal streets and parking facilities. Streetscaping should also be provided along Longwood Road to enhance the overall character of the area.

To accommodate these requirements, the MIP Master Plan should protect a right-of-way of at least 36 metres in width for Longwood Road. This right-of-way requirement and streetscape design will be confirmed with the City of Hamilton prior to construction.

Two local street intersections with Longwood Road are planned, with each intersection having east and west approaches serving both sides of the MIP site. The northerly local street intersection will be located south of the Highway 403 overpass structure and the bend in Longwood Road. It is expected that this intersection would accommodate all turning movements, will be controlled by traffic control signals and will have auxiliary turning lanes on each approach for left turning traffic. It will also contain enhanced pedestrian crossings on all approaches. The southerly local street intersection will be located north of the existing Longwood Road and Aberdeen Avenue intersection. It is expected that this intersection will be controlled by stop sign control on the local street approaches and left turning movements may be restricted.

In addition to the two local street intersections with Longwood Road, some of the existing driveway connections may need to be maintained to continue access for current activities. However, the local street plan should enable extra driveway connections to be phased out as development proceeds in the longer term.

*Internal Local Streets*

The internal local street network should provide convenient access to different developments on the MIP site. This network will serve commuter vehicular traffic, visitors, delivery of goods and services and access for emergency vehicles. It should also be well integrated with and part of a convenient on-site pedestrian circulation network. The local street network will be the primary means of bicycle access and circulation on the MIP site.

The Master Plan provides for a public street connection to the east of the Chatham Street/Frid Street area to integrate MIP with the adjacent business area. The exact alignment of the street will be confirmed in the near future through a City of Hamilton study.

This provides a secondary vehicular access to the MIP site that can accommodate some of the vehicular traffic as well as having a second access to this major development for emergency vehicles. Also, this local street connection to Chatham Street and/or Frid Street offers increased flexibility for public transit, pedestrian and bicycle circulation.

The other local streets will be developed in private ownership by the MIP developer. Private ownership will allow flexibility in design and lot fabric to meet development requirements.

The functional requirements for the internal local streets within the development are:

- The local streets will have two (2) through traffic lanes (i.e., one lane in each direction).
- Auxiliary on-street parking lanes will be provided at suitable locations on each side of the local streets where this does not conflict with street intersections, pedestrian crossings, green space access or other site provisions.
- Internal local street intersections will be controlled by stop sign control.
- The layout of internal local streets will give priority to vehicular access to adjacent sites, on-site pedestrian circulation and other site requirements. The street layout will discourage external traffic traveling through the MIP site.
- The local streets will have continuous pedestrian routes along both sides of the street to accommodate safe and convenient pedestrian movement.
• Bicycle lanes on local streets.

Streetscaping will be provided along the local streets consistent with the green space plans for the development.

External Transportation System
The long term development of the MIP will generate additional travel demands that will utilize the external transportation system, including roadways, public transit, pedestrian facilities and cycling facilities. At different stages of the development, it will be necessary for these transportation demands to be assessed in detail to determine the need for external improvements. These improvements will likely be at the principle intersection of the arterial road network, such as Aberdeen/Longwood and Main Street/Longwood. This ongoing process will involve a partnership between the MIP development managers, the City of Hamilton, transit operators, and possibly other agencies such as the Ministry of Transportation of Ontario (MTO).

Public Transit
The Master Plan encourages and supports a high level of public transit use for travel to and from the site. This will include transit supportive urban design which makes provisions for transit services to be located close to building sites with convenient, comfortable pedestrian connections between bus stops and the activity centres on the site. It will also include active efforts to promote the use of public transit services as a viable alternative to auto travel for persons traveling to and from the site.

The MIP master plan provides for a compact urban form and all development will be in an easy walk to transit stops on Longwood Road. Enhanced bus stops with ample space, weather protection and pedestrian furniture will be provided at bus stops located on each side of Longwood Road.

Travel demand between the McMaster University main campus and MIP is expected to be high. MIP development managers should work with the HSR to investigate opportunities to create direct service between MIP and the main campus or to improve transfer connections between the Longwood Road bus service and existing bus services to and from the McMaster University main campus. As MIP develops, opportunities to integrate GO Transit service should also be explored.

McMaster University students at the MIP should also participate in the McMaster/HSR universal bus pass program available on the main campus. Employees located on the MIP site should also be provided with incentives to use public transit, such as subsidized bus pass programs.

A shuttle bus service between MIP and the main Campus, or between MIP and downtown may be viable transit initiatives as MIP grows and travel patterns are understood.

Cycling Provisions
The MIP Master Plan includes provisions to encourage and accommodate persons traveling to and from the site by bicycles. It will also make provision for enhancements to the overall City of Hamilton cycling facilities adjacent to this development.

Designated bike lanes will be provided in each direction along Longwood Road through the site. Provision should also be made on the potential future roadway connection to Chatham and/or Frid Street for designated bike lanes. The internal local streets are expected to have relatively low traffic volumes and bicycle traffic can be accommodated in mixed traffic lanes.

Each of the buildings within the MIP should include provisions for bicycle access and parking. Indoor storage areas with lockable compartments and shower facilities are important considerations to promote commuter cycling.

Pedestrian Provisions
The MIP is designed to encourage pedestrian travel to and from the site as a means of healthy sustainable transportation. The different activities in the MIP development are expected to have a high level of interaction and internal pedestrian activity will be accommodated and encouraged through the design of a convenient, secure and comfortable pedestrian circulation system.
Continuous sidewalks will be provided along each side of Longwood Road with linkages to the internal pedestrian network. The sidewalks on Longwood Road will be separated from the roadway lanes by a tree lined street edge and on-street parking to provide separation from moving vehicular traffic. The Longwood Road bridge requires pedestrian improvements and should match the character and quality of the suggested Longwood Road improvements. MIP should work with the City of Hamilton to improve bridge conditions.

An internal pedestrian circulation network will be provided with convenient connections to each building as well as to park and outdoor activity areas. Sidewalks will be provided along the internal local streets and other off-street pedestrian paths. An enhanced pedestrian crossing of Longwood Road will be provided at the northerly intersection with the internal local streets. This location will be a major transit stop and will benefit from additional attention to material changes in the roadway and enhanced street furnishings. The pedestrian network will include amenities such as benches, weather protection, pedestrian scale lighting and pedestrian security provisions as warranted.

An active, ongoing TDM program should be established at the outset of development and maintained with a mandate to plan, encourage and implement measures that will reduce the peak period traffic related to the development. The TDM program will consider measures that encourage public transit use, walking, cycling, travel during off-peak periods, increased vehicle occupancy, non-traditional work arrangements and on-site services that reduce the need for travel. All companies and organizations at MIP should be required to participate in the TDM program.

The specific TDM measures should be planned in consultation with the site tenants to ensure that the measures have a high level of acceptance and that a reasonable balance is achieved between overall transportation efficiency and the freedom of individual choice. The TDM program will include regular consultation with McMaster University, the City of Hamilton and local/regional transit providers to ensure efforts are well coordinated and effective.

6.7.3 Parking Facilities

Parking for MIP will be provided in several different means as the park develops. In the short term, there will be ample opportunity to provide surface parking on the vacant parcels prior to their development. Each new building is recommended to have at least one level of underground parking in order to meet its needs. As the Park develops it may be necessary to provide a parking structure to meet total parking requirements.

The streets of MIP should be designed to provide and maximize on-street parking opportunities. Regulated on-street parking provides opportunities for short term visitor parking as well as providing a built-in traffic calming element and a buffer for the pedestrian zone from traveling vehicles.

Surface parking areas will be distributed in small courts or clusters throughout the site to address visitor and short term parking needs. To promote the sustainable design objectives of the Park, these parking lots should be designed with a “green parking” approach. These techniques include providing pervious paving materials, providing significant trees areas to create shade and using bioretention areas to treat run-off from parking areas.

An extensive TDM program will not only reduce auto trips to the site but will reduce parking demand and the cost of providing underground or above ground parking facilities. In the short term, it is recognized that the modal share for transit, walking and other alternatives to the automobile may be low and, conversely, parking demand may be high. This Master Plan assumes that over time automobile dependency will decrease and the overall demand for on-site parking facilities will also fall.
6.8 Phasing of Development

Development will be phased generally from north to south. The reuse of the existing Camco office building along with the sanitary sewer outlet being located at the north end of the site and the location of the east side stormwater pond in the northeast portion of the site dictates that development proceed in a north to south fashion.

Phasing of development is generally depicted in Figures 6-6 to 6-12 and provides for services and infrastructure also to be phased from a north to south direction. Variation in this pattern is possible subject to the confirmation and installation of appropriate services.

6.9 Implementation

This Master Plan establishes a development direction and framework for the McMaster Innovation Park. Further detailed design will be required to establish site infrastructure, street locations and the development parcels.

A series of City of Hamilton approvals will also be required and cost sharing arrangements may be required for various infrastructure improvements.

The design and ultimate right-of-way for Longwood Road will be subject to a City of Hamilton Environmental Assessment Process. This process should consider both transportation requirements as well as the urban design aspects of the main street character promoted through the master plan. Following confirmation of the right-of-way and its functional requirements, detail design will be required prior to implementation by the City and/or McMaster University.

The creation of other public streets on site will require plan of subdivision approval from the City of Hamilton in order to establish the right-of-way and provide for its dedication to the City. Alternatively, the City may accept dedication of a right-of-way from the University.

A reference plan and various legal property documents will be required in order to provide for long term lease or conveyance of property to particular tenants or developers. Committee of Adjustment approval may be required to provide for long term lease arrangements.

All development on site will be subject to the City of Hamilton site plan approval process. The City of Hamilton also has site plan guidelines which will apply to the site development.
Figure 6-6. PHASE TWO
Figure 6-6. PHASE THREE
Figure 6-6. PHASE FOUR
Figure 6-6. PHASE SIX
Figure 6-7. View across MIP looking north-west.
Figure 4.4 MIP looking south-west.