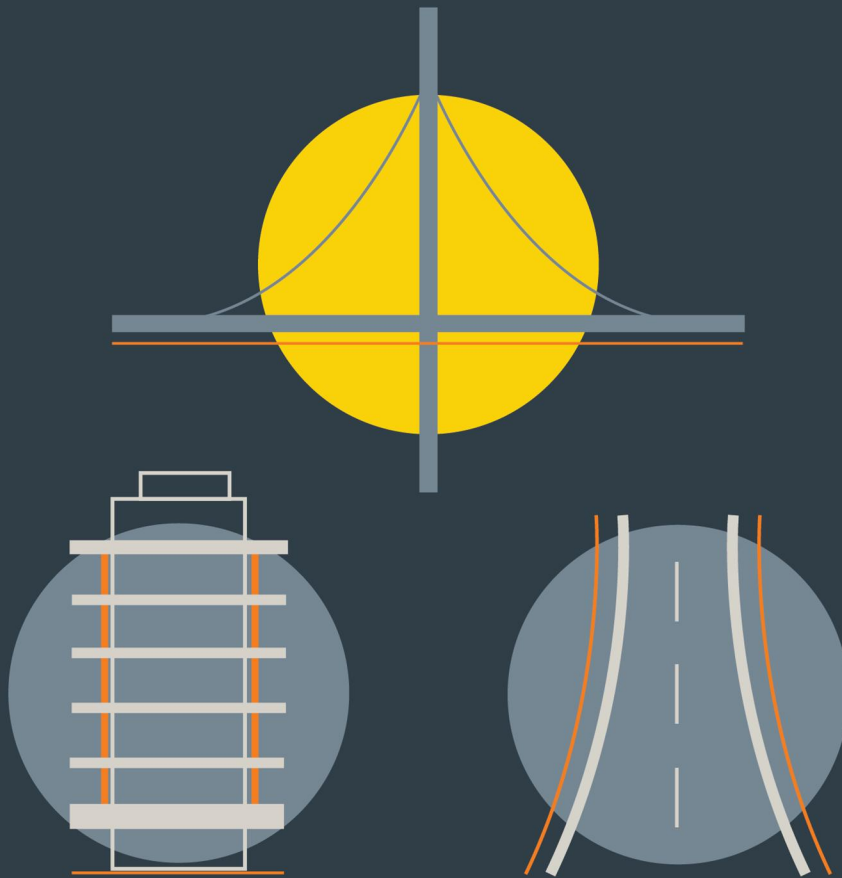


INFRASTRUCTURE



Project Title: Strategic Housing Development at Colpe West, Drogheda, Co. Meath

Project Number: p170092

Report Ref: 170092-Rep-013

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Date: August 2020

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Revision	Issue Date	Description	Prepared	Reviewed	Approved
Draft	16.08.2019	SHD Stage 3 Planning	AO'S	DMW	DMW
Draft	29.08.2019	SHD Stage 3 Planning	AO'S	DMW	DMW
Draft	04.10.2019	SHD Stage 3 Planning	AO'S	DMW	DMW
Draft	29.08.2019	SHD Stage 3 Planning	AO'S	DMW	DMW
Final	11.10.2019	SHD Stage 3 Planning	AO'S	DMW	DMW
Final	9.03.2020	SHD Stage 2 Planning New Application	AO'S	DMW	DMW
Draft	10.07.2020	SHD Stage 3 Planning New Application	AO'S	DMW	DMW
Final	17.08.2020	SHD Stage 3 Planning New Application	AO'S	DMW	DMW

TABLE OF CONTENTS

1.	WORKS PROPOSAL	3
2.	NOISE & VIBRATION.....	4
3.	SEDIMENT AND WATER POLLUTION CONTROL PLAN	6
4.	BIODIVERSITY PROTECTION MEASURES.....	8
5.	ARCHAEOLOGY WORKS.....	10
6.	DUST CONTROL	11
7.	CONCLUSION	12

1. WORKS PROPOSAL

This Environmental Management Plan is for the works associated with the construction of a proposed residential development and link street at Mill Road, Colpe, Drogheda, Co. Meath. The environmental management plan addresses noise and vibration, pollution control, dust control, road cleaning, all associated with the construction works.

The existing lands are predominately green field with Colpe Road and Mill Road existing to the immediate south and east, refer to Figure 1.0.

The application lands are located at approximately Forthfields House, Colpe East, Drogheda, Co. Meath. The proposed development comprises of 357 residential units (169 no. houses, 52 no. duplex units and 136 no. apartments) and a childcare facility and associated infrastructure.

The associated site and infrastructural works include foul and surface water drainage, roads and footpaths, car parking spaces and bicycle spaces, public open space, landscaping, street lighting, walls and fences.



Figure 1 Site Location (Extract Google Maps)

2. NOISE & VIBRATION

During the construction works the Contactor shall comply with:

- BS 5228: 2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites, Part 1 and Part 2.
- Guidelines for the Treatment of Noise and Vibration in National Road Schemes (NRS, Revision 1, 2004)
- Safety, Health and Welfare at Work (General Application) Regulations 2007, Part 5 Noise and Vibration.

The noise limits to be applied for the duration of the infrastructure works are those specified in the B Category of BS 5228. These limits are summarised below and will be applied at the nearest sensitive receptors to the works.

- Night (23:00-07:00) = 50dB
- Evening (19:00-23:00) = 60dB
- Day (07:00-19:00) = 70dB

The total noise (LAeq) which should not be exceeded during daytime is therefore 70dB.

Vibration limits to be applied for the infrastructure works are those specified in the TII document Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TII, Revision 1, 2004). These limits are outlined below:

Allowable Vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of;

<u>Less than 11Hz</u>	<u>11 to 50 Hz</u>	<u>50 to 110 Hz (and above)</u>
3mm/s	3 to 8mm/s	8 to 11mm/s

All works on site shall comply with BS 5228 2009 which gives detailed guidance on the control of noise and vibration from construction activities. In general the contractor shall implement the following mitigation measures during the proposed infrastructure works:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Keep internal haul roads well maintained and avoid steep gradients.
- Minimise drop height of materials.
- Start-up plant sequentially rather than all together

More specifically the Contractor shall ensure that:

- In accordance with Best Practicable Means, plant and activities to be employed on site are reviewed to ensure that they are the quietest available for the required purpose.
- Where required, improved sound reduction methods are used e.g. enclosures.
- Site equipment is located away from noise sensitive areas, as much as physically possible.
- Regular and effective maintenance by trained personnel is carried out to reduce noise and / or vibration from plant and machinery.
- Hours are limited during which site activities likely to create high levels of noise and vibration are carried out.

A site representative responsible for matters relating to noise and vibration will be appointed prior to construction on site.

A noise and vibration monitoring specialist will be appointed to periodically carry out independent monitoring of noise and vibration during random intervals and at sensitive locations for comparison with limits and background levels. It is proposed that noise and vibration levels be maintained below those outlined above as part of these infrastructure works.

All vehicles and mechanical plant used for the purpose of the Works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order. In addition, all diesel engine powered plant shall be fitted with effective air intake silencers. All compressors shall be "sound reduced" models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use. All ancillary pneumatic percussive tools shall be fitted with mufflers or silences of the type recommended by the manufacturers, and where commercially available, dampened tools and accessories shall be used.

All ancillary plant, such as generators and pumps, shall be positioned so as to cause minimum noise disturbance. If operating outside the normal working week acoustic enclosures shall be provided.

Where construction activities are required in close proximity to neighbouring noise sensitive properties, a solid hoarding of approximately 2.5m in height should be erected to provide a degree of acoustic screening to the lower storeys.

Local screening should be provided for stationary plant such as generators and compressors.

An acoustically screened area should be provided on the site specifically for noisy operations such as grinding and cutting metal.

A noise liaison officer should be appointed and charged with the responsibility of keeping people informed of progress and by setting down procedures for dealing with complaints.

3. SEDIMENT AND WATER POLLUTION CONTROL PLAN

All works carried out as part of these infrastructure works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will co-operate in-full with the Environmental Section of Meath County Council.

As part of the overall construction methodology, the following issues will be addressed and have been identified as being of particular risk and/or concern to pollution.

- Contamination of Watercourse / Groundwater – There is a risk that ground water could become contaminated with lime from cement, oils and fuels from machines which could subsequently find its way into the local adjacent watercourses. The measures proposed to be put in place to mitigate any potential damage from the effluent of contaminated ground water would be to create an exclusion zone, as far as reasonably practicable, by the erection of a visible 1.0m high barrier along the watercourse. This will be formed by means of steel road pins, which will be used to support a PVC 'orange' barrier with warning signs appropriately fixed at regular intervals. The signs shall read 'NOTICE – NO DISCHARGE OF ANY KIND IS PERMITTED IN THIS VICINITY OR BEYOND THIS EXCLUSION ZONE'
- Sediment & Erosion – Similar to the above, adjacent watercourses/groundwater need to be protected from sedimentation and erosion due to direct surface water runoff generated onsite during the construction phase. To prevent this from occurring surface water discharge from the site will be managed and controlled for the duration of the construction works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary positive drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction. A series of geotextile lined cascading, high level outfall, settling basins will be installed upstream of the agreed discharge point. Alternatively, a 'siltbuster' silt control unit can be used on the outfall. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed before being discharged in a control manner to the agreed outfall. All inlets to the cascading settling basins will be rippedraped to prevent scour and erosion in the vicinity of the inlet.
 - Minimisation of site disturbance
 - Implement sediment control (as outlined above)
 - Minimise the potential for erosion
 - Prevent sediment-contaminated water leaving the site

Such measures shall be agreed as part of the site's discharge licence.

Temporary mounding and sediment control would be implemented to ensure silts do not enter the existing ditch during the construction stage.

- Water quality monitoring – It is proposed to implement a programme for monitoring water quality at the outfall as part of the construction of this development, in agreement with the Planning Authority. This programme and locations of sampling will be agreed with Meath County Council.
- Discharge Licences – It will not be permitted to discharge into any newly constructed storm water systems or watercourse without adhering to the conditions of the discharge licence and agreeing the same with the Site Manager and Local Authority Area Engineer.
- Over Ground Oil / Diesel Storage – Only approved storage system for oil / diesel within the site will be permitted, (i.e. all oil / diesel storage to be located within a designated area placed furthest away from adjacent watercourses and contained within constructed bunded areas e.g. placed on 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally). The bunded area will accommodate the relevant oil / diesel storage capacity in case of accidental spillage. Any accidental spillages will be dealt with immediately on site however minor by containment /removal form site. Any accidental spillages will be dealt with immediately on site however minor by containment /removal form site.
- Disposal of Wastewater off Site – The Site Management Team will maintain a record of all receipts for the removal of toilet or interceptor waste off site to insure its disposal in a traceable manner. These will be available for inspection by the Environment Section of Meath County Council at all times.
- Road Sweepers / Cleaning – The cleaning of public roads in and around the subject site will be undertaken to reduce environmental impacts and care will be taken to prevent any pollution of watercourses from this activity.
- A designated refuelling area will be located at least 30m from any watercourses. (LB180620-14).
- Site Personnel will be trained in the importance of preventing pollution and mitigation measures

4. BIODIVERSITY PROTECTION MEASURES

- Where practicable, the removal of trees and other features suitable for use by nesting birds shall be undertaken outside the bird nesting season (avoiding the period 1st March to 31st August). Should the construction programme require vegetation clearance between March and August bird nesting surveys shall be undertaken by suitably experienced ecologists. If no active nests are recorded, vegetation clearance shall take place within 24 hours. In the event that active nests are observed, an appropriately sized buffer zone shall be maintained around the nest until such time as all the eggs have hatched and the birds have fledged. Once it is confirmed that the birds have fledged and no further nests have been built or occupied, vegetation clearance may take place. Care must be taken during development to ensure that common lizards, common frogs and smooth newts (which are all protected under the *Wildlife Act (1976)* and subsequent amendments) are not harmed. These measures should follow the manual "*The Management of Noxious Weeds and Non-Native Invasive Species Ireland* (Maguire et al. 2008)". (Ref: LB180620-14)
- All site clearance and landscaping works will comply with current legislative requirements and best practice. All retained trees that are within or close to the working wayleave of the proposed development will be protected in accordance with the requirements of British Standard BS5837:2012 *Trees in Relation to Design, Demolition and Construction' – Recommendations*, with protective fencing being installed around all trees to be retained, prior to commencement of development. The planting plans and landscaping proposals will ensure that no invasive species are introduced, either deliberately or inadvertently, to the site.

Badger Mitigation

- In order to prevent harm to the badgers, the badger setts will need to be sealed and badgers excluded from accessing the setts temporarily for the duration of the construction works.
- The works will require a licence from the NPWS to disturb the Badger sett. The application for this licence has been made and the protective measures which will be adhered to during construction works. This will include protective fencing around the sett entrance to prevent encroachment of machinery.
- There will be no direct disturbance of the badger sett. Where excavation of soil will take place within 50m of the sett it will be done only under the supervision of a suitably qualified ecologist.
- Prior to the commencement of the construction phase, a specialist mammal ecologist shall visit the site to determine whether badger activity has changed. In addition, further survey work to identify alternate setts in the area would be required to ensure that the badgers could relocate to a suitable alternative location.
- Exclusion of badgers from an active sett should only be carried out between July and November inclusive to avoid the badger breeding season. If the sett were closed outside this period, it is possible that cubs could remain trapped underground.

- Where no alternate setts are found within the territory, an artificial sett should be constructed within the affected groups territory.
- Only a licenced expert shall be permitted to carry out the sett closure measures.

Bat Mitigation

As recommended in the bat survey report:

- All the mature trees within the site shall be examined for the presence of bats prior to felling by a bat specialist. Should bats be noted in any tree, it is a protected structure and a derogation must be sought as discussed above, Current knowledge from two surveys is that there are no bat roosts within the site and this is a precautionary measures. A bat detector survey within the appropriate season and weather conditions would allow the ruling out of several trees at one time. Alternatively, trees may be surveyed by a bat specialist from height (hoist, tree climbing etc.).

Artificial lighting can affect areas beyond the site boundary. As recommended in the bat survey report;

- Lighting should be controlled to avoid light pollution of green areas and should be targeted to areas of human activity and for priority security areas. Motion-activated sensor lighting is preferable to reduce light pollution. None of the remaining mature trees or trees proposed for planting should be illuminated.
- Dark corridor for movement of bats along the grounds of the site. Lighting should be directed downwards away from the treetops.
- All luminaires shall lack UV elements when manufactured and shall be LED
- A warm white spectrum (ideally <2700Kelvin) shall be adopted to reduce blue light component.
- Luminaires shall feature peak wavelengths higher than 550nm.
- Tree shall remain unilluminated.
- Planting shall provide areas of darkness suitable for bats to feed and commute through the site.'

Other small mammals

- Woody debris from the proposed management of hedgerow areas on site should be left in an out-of the way site as compensatory hedgehog habitat for the duration of the construction stage of the Proposed Development.
- Hedgehogs also frequent long grass for foraging and daytime nesting sites so caution when strimming/mowing these areas of the site is advised. Work likely to cause disturbance during hibernation – for example removal of hibernation habitats such as log piles and dense scrub – should not take place during November to March.

Tree and Hedgerow removal

- A root protection zone has been assigned by the Arboriculturist for all trees that are to be retained as part of the Proposed Development. Protective fencing will be erected in advance of any construction works commencing outside the drip-line of the canopy of the retained trees and along the site boundaries in order to prevent damage by construction machinery including compaction of

soils. The protective fencing shall be approved by a qualified arborist or ecologist to ensure that it has been properly constructed prior to any works commencing.

Other measures

- Fuels, oils and other dangerous substances should be stored in a bunded area away from any drainage ditches or watercourses.
- Sediment-laden water will not be discharged to water courses or surface ditches. Run-off will be directed to suitably sized silt traps or attenuation ponds. Only clean, silt-free water will be discharged to ditches etc. there shall be no discharge to surface water without an appropriate discharge licence in place.
- Pollution prevention measures will be inspected at appropriate intervals and a record of these inspections will be maintained by the site manager.

5. ARCHAEOLOGY WORKS

As outlined in '*Conservation and Management Plan 2017_55*' carried out by Archer Heritage Planning Ltd. the following recommendations are provided with respect to archaeology Works for the development;

- The location and extents of a Cemetery ME021-011001- and Enclosure ME021-011002- have been identified with an exclusion zone of 10m from the edge of the Enclosure ME021-011022- using the ITM data from the geophysical surveys to be provided.
- A temporary post and wire fence with appropriate no entry signage be erected around this exclusion zone prior to groundworks commencing and that this should be carried out under archaeological supervision.
- Monitoring is recommended for all groundworks in the overall development to be carried out by a suitably qualified archaeologist. Should archaeology be uncovered a mitigation strategy will be agreed with the Department of Culture, Heritage and the Gaeltacht (DCHG) which may include excavation or preservation in situ.
- On completion of the overall development the temporary post and wire fencing and signage may be removed. The exclusion zone may be seeded with grass and/or planted with low rooting shrubs in order to demarcate the area and prevent damage due to recreational use in the future.

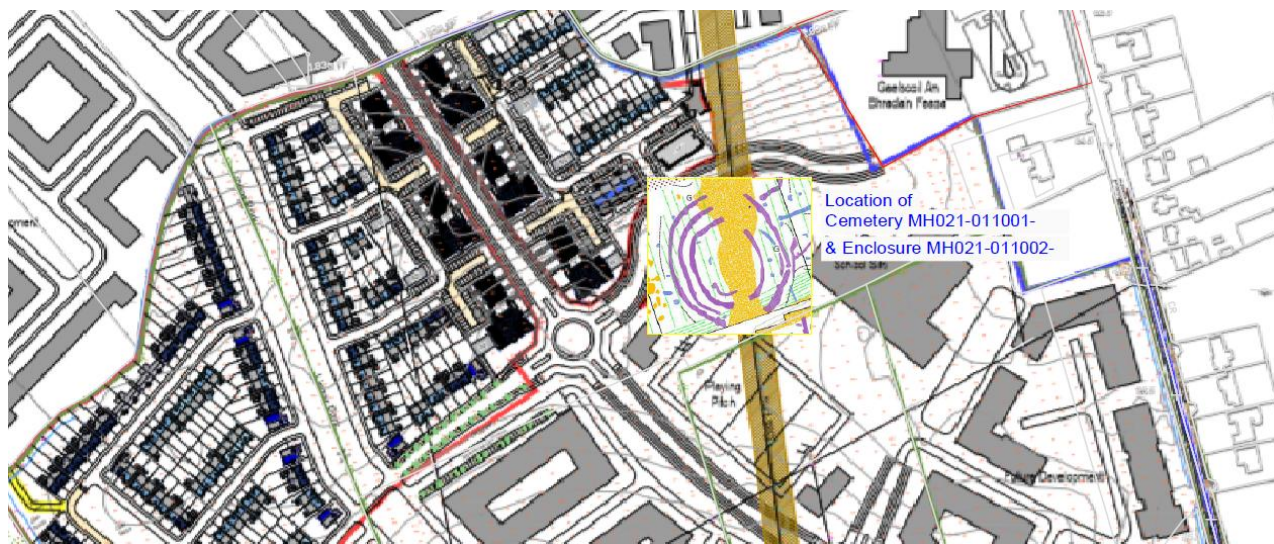


Figure 2 Extract from 'Conservation and Management Plan 2017-55' showing location identified.

6. DUST CONTROL

The objective is to ensure that dust does not impact significantly at nearby receptors. Therefore, a *dust management plan* (DMP) will be formulated for the site, which will address the following:

- Specify a site policy on dust
- Identify site management of dust
- Develop documented systems for managing site practices and implementing management controls
- Outline how the DMP can be assessed

Site Management:

The siting of construction activities and storage piles will consider the location of sensitive receptors and prevailing wind conditions to minimise the potential dust nuisance. Site management will include the ability to respond to adverse weather conditions by either restricting operations on site or using effective control measure in a timely manner before potential for nuisance occurs.

- During working hours the site agent or another competent appointed member of staff shall monitor dust control methods;
- A register shall be kept on site logging all correspondence and telephone / verbal complaints regarding construction activities outlining remedial actions if any;

- A site representative responsible for matters relating to dust management will be appointed prior to construction on site.
- The site representative responsible for dust management shall ensure that dust management procedures are followed and ensure monitoring and assessment of same;

Dust Control Measures:

- Apply a speed limit of at least 20km/hr for on-site vehicles
- Provide water bowsers during periods of dry weather to ensure unpaved areas are kept moist. Spray exposed site haul roads during dry and / or windy weather.
- Ensure paved roads are kept clean and free of mud and other materials. Sweep hard surface roads, inside and outside the site, to ensure roads are kept clear of debris, soil or other material.
- Restrict un-surfaced roads to essential site traffic.
- Provide water bowsers during periods of high winds and dry weather conditions to ensure moisture content is high to increase the stability of the soil.
- During the proposed infrastructure works the following mitigation measures shall be implemented to minimise dust emissions:
 - Construction techniques shall minimise dust release into the air.
 - Protect overburden material from exposure to wind by storing the material in sheltered regions of the site.
 - Regular watering of stockpiles during dry and windy periods.
 - Located any stockpiles away from sensitive receptors, (i.e. receptors sensitive to dust release).
 - Provide tarpaulins over all unacceptable excavated materials being carted off site.
 - Control vehicle speeds and impose speed restrictions, (speed can mobilise dust).
 - During dry spells and if deemed necessary monitoring of dust levels shall be carried out using the Bergerhoff Method i.e. analysis of dust collecting jars left on-site (German Standard VDI 2119, 1972). Results will be compared to the TA Luft guidelines (TA Luft, 1972). Should an exceedance of the TA Luft limit occur during, additional mitigation measures, for example more regular spraying of water, shall be implemented.
- The excavating machines will be cleaned on a daily basis to ensure no excess grease and dust is left on the machine. This will be carried out at low level below the height of the hoarding to prevent any mud coming in contact with the public.

7. CONCLUSION

The Construction Environmental Management Plan addresses construction activities on site that may impact on noise, air quality, water quality or biodiversity should the plan not be put in place and implemented.

These include procedures for monitoring and tracking construction activities and ensuring construction personnel are trained and educated as necessary. The construction & environmental management plan should be reviewed as the construction phase progresses to accommodate any changes in activities on site.