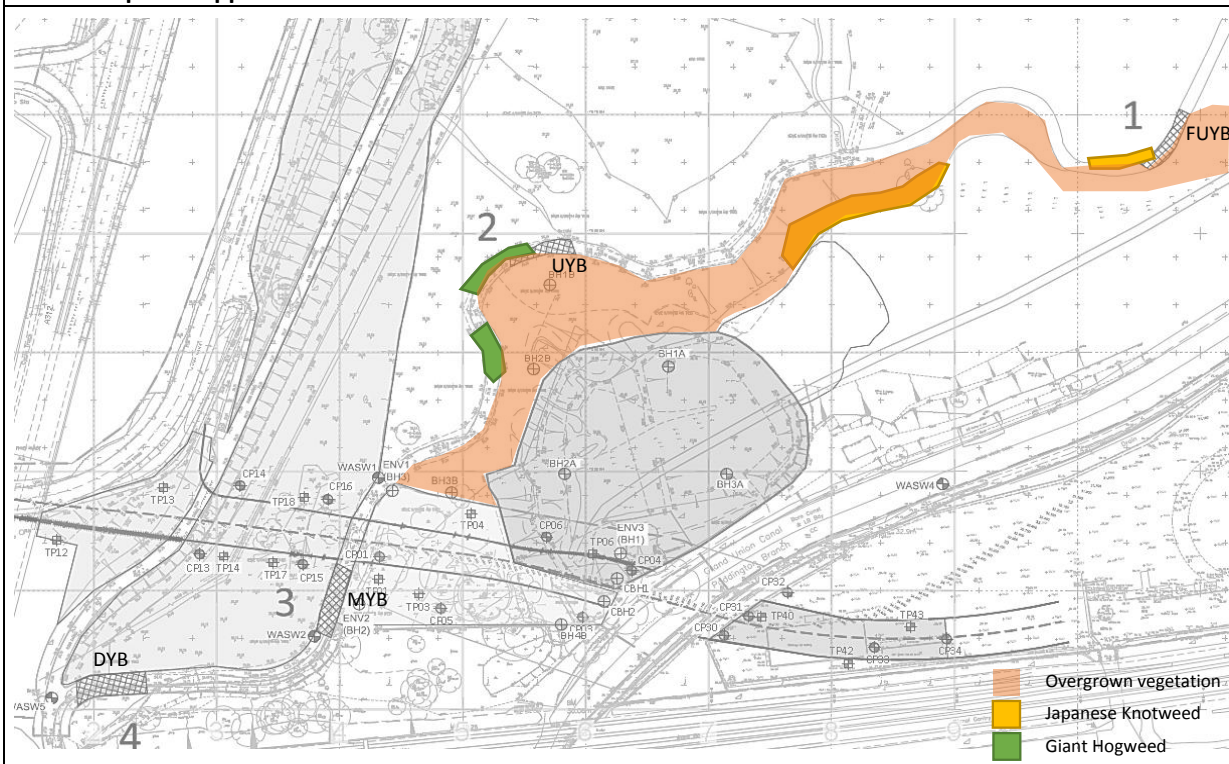


Other comments and observations (ecological concerns? Water observations? Anticipated issues?)

- Embankment toe drainage or surface runoff management should be implemented to impede the direct pathway of entrained silt into Yeading Brook.
- Invasive species in full bloom such as Giant Hogweed and Japanese Knotweed should be fenced off and construction workers should be notified of the personal dangers and risk of spread around the site from vehicle and pedestrian movements.
- Two of Environ's damaged boreholes have been replaced though it appears the redundant boreholes have not been suitably decommissioned. One redundant location is positioned directly in the Yeading Brook channel providing a direct pathway to groundwater and natural underlying strata. The redundant borehole is unsealed with open slotted pipe protruding above ground surface exposing it to possible cross-contamination, particularly with silt washout flowing into its proximity from the zone 4 embankment.

Correspondence requested by FMC/CGL**Correspondence received from FMC****Invasive species approximate location**

Summary photos



Fill works to Pump Lane area



Fill works to Pump Lane area



Overgrown and restricted access to some borehole sample locations (BH1B, BH2B, FUYB and UYB)



Giant Hogweed in full bloom near Yeading Brook bank



Detail of Giant Hogweed poisonous leaves and stem



Detail showing scale of Giant Hogweed stem



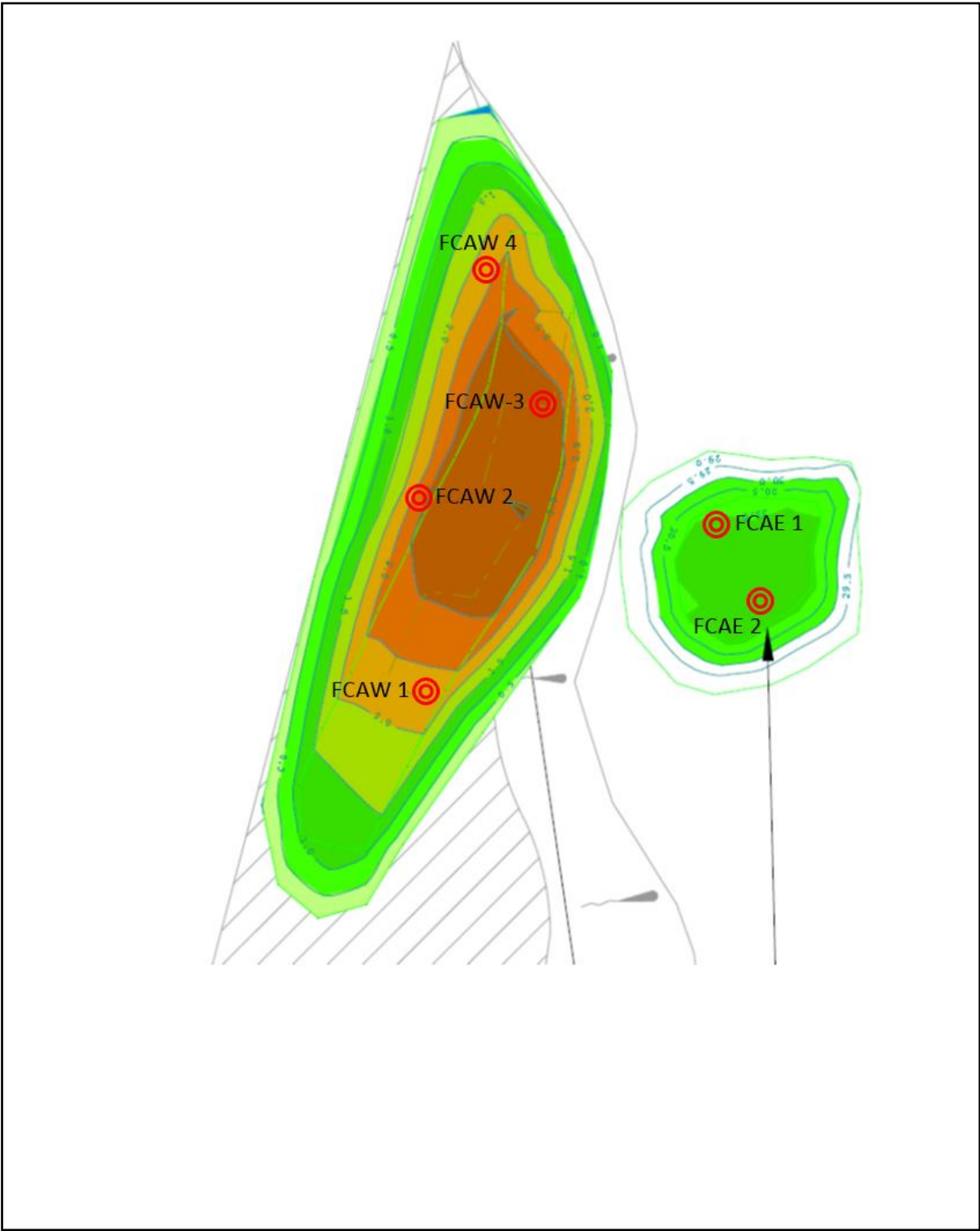
Replacement Environ borehole (1) and exposed open redundant borehole in Yeading Brook channel (2)



Bank widening, dredging and reed bed installation works along Yeading Brook



Client	Project	Job No
FM Conway	Southall Western Access	CG/28308
	Title	Figure 1
	Lagoon topsoil sample location plan	



Client	Project	Job No
FM Conway	Southall Western Access	CG/28308
	Title	
	FCA topsoil sample location	Figure 2

Site Observation Report Form



SITE:	Southall Western Access	JOB NO:	CG/28308
Date and time:	12/09/2018 09:20 to 16:45	VISIT BY:	CRG
WEATHER:			
Time	Description		
09:20 to 16:45	Cool, overcast day with light winds		
SVR 113			

Site operations

Work in hand

- CGL to sample stockpiled topsoil in lagoon and FCA.
- CGL to investigate water seepage at toe of zone 4 south embankment.
- CGL to investigate possible ACM discovery on zone 4 north embankment.
- CGL to inspect identified soft spot on cycle path section from bridge deck.
- FMC installing aggregate to pavement sections
- FMC completing construction of attenuation basin

Observations

Topsoil sampling from lagoon and FCA

CRG consulted Mark Matthews (land surveyor) who provided updated volumes/ positions of the topsoil stockpiles to be sampled. Two topsoil stockpiles were present in the lagoon. The larger topsoil stockpile was located in the western section of the lagoon (referenced 'LW') and was 5102m³ in volume, the smaller stockpile, to the east of the main stockpile, was 528m³ in volume (referenced 'LE') and. A further two stockpiles were located in the FCA, the larger stockpile to the west (referenced FCAW) was 1252m³ and smaller stockpile to the east (referenced FCAE) was 269m³. Vegetation and loose surficial material was removed to expose the underlying topsoil. A series of hand pits were excavated to a depth of between 0.5 to 0.6m bgl and incremental soil samples were obtained for chemical analysis against CGLs reuse criteria. Remaining samples were then combined, mixed and a composite sample obtained for each of the four stockpiles and submitted for laboratory analysis against topsoil parameters in BS3882. , The topsoil was vegetated, very compact and difficult to excavate manually. It was formed of a dark grey brown to brown very gravelly silty sand, the gravel comprised largely of flint though was mixed with general Made Ground including brick, concrete, aggregate, plastic and general refuse. There were no visual or olfactory indicators of contamination. Samples were cold stored overnight at CGL and couriered directly to i2 Analytical the following morning.

Water seepage, Zone 4 south embankment toe

Water is emerging / standing at the toe of the embankment and may, locally, compromise the long-term stability. Given the recent extended dry weather conditions and elevation of the embankment toe, it is unlikely to be attributed to groundwater conditions or ingress from the canal. A shallow hand pit was excavated to approximately 0.5m below ground level at the embankment toe and no groundwater ingress was observed. The soils exposed below the surface were dry and comprised of a dark grey brown slightly clayey very silty GRAVEL. Some water ingress was observed from ponding water on saturated fine slurry deposits at the toe of

the embankment. This appeared to be a combination of the surface material composition and method of installation. The embankment surficial material comprises a poorly graded loose coarse gravel, combined with very silty fine sand. It appears that, during high winds and precipitation, the fines are easily separated from the gravel and entrained in surface runoff downslope and deposited at the toe, this has caused an accumulation of fines at the embankment toe, where underlying soils are relatively impermeable, causing localised ponding. Additionally, the embankment has been compacted with tracked vehicles, which have caused grooves parallel with the slope gradient, which appear to have accelerated surface runoff during the more recent wet weather conditions. Localised rills, brading and gullies are forming on the embankment surface as fines continue to be washed downslope. As a result, the surface soil on the embankment predominantly consist of loose gravel with much of the finer fraction no longer present. This has contributed to the embankment surface becoming exclusively loose gravel and the finer material is completely removed. This process was previously identified on the north embankment and is also notable along the FCA embankments. As there is a risk of fines flowing directly into controlled waters. It is recommend that landscaping, topsoil placement and seeding is completed as soon as possible to amour the exposed embankment surface and mitigate further erosion.

Possible ACM on northern embankment

CGL inspected the northern embankment, including an area that was already fenced off, and identified several fragments of what appeared to be asbestos cement board. The fragments appeared damp following overnight rain and contained within the cordoned off area and will need to be removed by a specialist contractor. No works should be undertaking in this area until it has been fully inspected and potential ACM fragments removed. Damping down, using a suitable spray with surfactant, sound be maintained, whilst the fragments are still present, where dry weather conditions are forecast, to limit the risk of airborne fibres.

Soft ground on pedestrian pathway

Soft ground was previously observed during a site walkover on 6th September at the surface on the pedestrian pathway in the transition zone between the GUC bridge deck and embankment. The softer ground was comprised of a sandy material. This had evidently been removed and a new suitable material was being placed during CGLs attendance.

Sampling and/or testing undertaken or observed

- A total of 19 topsoil samples were collected for testing against the re-use criteria.
- A total of 4 composite samples for topsoil testing.
- A total of 4 bulk bags of additional soil should additional testing be required.

Other comments and observations (ecological concerns? Water observations? Anticipated issues?)

Correspondence requested by FMC/CGL

FMC provided i2 Analytical with a suitable purchase order for the required laboratory testing.

Correspondence received from FMC

FMC provided updated topsoil stockpile volumes drawing - FMC-SS-WA-180-A

Summary photos



Overview of topsoil stockpile in west lagoon



Overview of topsoil stockpile in east lagoon



Composition of topsoil in west lagoon



Water emerging/ standing at south embankment toe



Fines washout accumulating at the embankment toe



Fines slurry saturated with ponding surface water



Surface of embankment becoming exclusively gravel as fines are stripped away



Original embankment finer material visible at depth

	
Surface of embankment becoming exclusively gravel as fines are stripped away	Grooves from tracked vehicles create preferential drainage channels for surface runoff and fines
	
Hand pit at south embankment toe	Water ingress only from standing surface water
	
Section of north embankment fenced off where possible ACMs identified	Identification of multiple Chrysotile (white) cement board fragments identified
	
Identification of multiple Chrysotile (white) cement board fragments identified	Overview of contaminated AMC area
	
Overview of FCA	Overview of FCA topsoil stockpile (FCAW)

Site Observation Report Form



	
Overview of FCA topsoil stockpile (FCAE)	Gullying and rills forming on FCA embankment with fines accumulating at the toe.
	
Fines washout at embankment toe	Overview of pedestrian pathway compaction
	
Area where soft spots identified, sandy material removed and replaced	Advised to remove remaining sand used around service duct and replace

Site Observation Report Form



SITE:	Southall Western Access	JOB NO:	CG/28308
Date and time:	15/10/2018 09:20 to 15:30	VISIT BY:	ALC
WEATHER:			
Time	Description		
09:20 to 15:30	Cool, overcast some drizzle. Heavy rain previous night.		
SVR 114			

Site operations	
Work in hand	- CGL to decommission borehole BH3 by Yeading Brook Reno mattress. - CGL to sample top of embankment fill in Central Embankment north and south (Zone 4) for ACM testing.
Observations Decommissioning borehole BH3 ALC (CGL) site walkover with TC (FMC). Due to the heavy rainfall the night before, the level of Yeading Brook had risen and BH3 had become completely immersed by the river, and it was therefore impractical to attempt decommissioning of the borehole. ALC agreed with TC to postpone the decommissioning until the water level had receded. Oakland SI (2 man crew) were inducted by FM Conway and confirmed they would be able to return to site on Friday 19/10/18 to decommission the borehole. Sampling for ACM testing on Central Embankment Following identification of ACM on the northern slope of the Central Embankment, CGL were instructed by FMC to carry out further sampling and testing for ACM on both sides of the embankment. A series of machine dug shallow pits between 0.1m and 0.3m depth on the northern and southern side slopes of the Central Embankment (Zone 4), and soil samples were obtained by ALC for ACM testing. The slopes had not been topsoiled. The embankment fill comprised dark grey brown to brown gravelly silty clay, the gravel comprised mainly flint but with occasional brick, concrete, and tiles. The top 100mm of the fill on the slopes and the material at the toe of the slopes was softened. Rills were noted to have formed on both slopes. It appeared as though fines have washed down from the slopes and accumulated at the toe. There were no visual or olfactory indicators of contamination. Sampling for Geoenvironmental Verification of EGUC Landscape Fill FMC requested sampling and testing of the landscape material which had been placed in front of the EGUC wing walls. TC (FMC) confirmed to ALC (CGL) that the lower half of the fill to the north wing wall adjacent to the canal, had been sourced from the FCA. This material comprised a dark brown sandy gravelly clay with some brick and	

concrete cobbles.

The fill to the upper half and all of the landscape fill in front of the southern wingwall had been sourced from a stockpile on the Main Site. This material comprised a brown/orange very gravelly clay with some cobbles of brick and concrete.

There were no visual or olfactory indicators of contamination.

Sampling and/or testing undertaken or observed

A total of 4 soil samples (embankment fill) were collected from EYB north slope for ACM testing.

A total of 3 soil samples (embankment fill) were collected from EYB south slope for ACM testing.

A total of 3 soil samples (landscape fill) were collected from EGUC north landscape fill in front of the wing wall for chemical and ACM testing.

A total of 2 soil samples (landscape fill) were collected from EGUC south landscape fill in front of the wing wall for chemical and ACM testing.

Other comments and observations (ecological concerns? Water observations? Anticipated issues?)

None

Correspondence requested by FMC/CGL

CGL provided i2 Analytical with a testing schedule for the sampling. Testing to be undertaken un FMC purchase order.

Correspondence received from FMC

None

Summary photos



Overview of EYB North Slope



Typical fill in EYB North Slope



Overview of EYB south slope. Note fines washout and softened material at toe of slope



Typical fill EYB south slope



Overview of EGUC north landscape fill.



Typical landscape fill in EGUC north (lower half) sourced from FCA



Typical landscape fill in EGUC north (upper half) and EGUC south sourced from Main Site



Overview of EGUC south landscape fill



Typical landscape fill in EGUC south sourced from Main Site

Site Observation Report Form



SITE:	Southall Western Access	JOB NO:	CG/28308
Date and time:	19/10/2018 09:00 to 15:30	VISIT BY:	ALC
WEATHER:			
Time	Description		
09:00 to 15:30	Cool, very bright and sunny.		
SVR 115			

Site operations

Work in hand

- CGL to decommission borehole BH3 by Yeading Brook Reno mattress.
- CGL to sample stockpiles in FCA for chemical testing for reuse as topsoil.

Observations

Decommissioning borehole BH3

Oakland SI returned to site to decommission BH3 adjacent to Yeading Brook under the supervision of CGL (ALC). This had been postponed on 15 November when the borehole had been flooded due to heavy rainfall and the water level rise in Yeading Brook. The decommissioning was supervised by CGL (ALC). Removing the standpipe proved to be difficult. Oakland SI initially attempted to pull the standpipe out using wrenches and hand digging around the pipe, but this didn't work so the standpipe was removed using a hydraulic jack. The borehole was backfilled with grout to ground level.

Sampling for chemical and ACM testing of FCA stockpiles

Since CGL's last visit on site the original stockpile mound of topsoil/made ground had been separated and split into 5 different stockpiles (see attached plan). Deleterious material had been screened and riddled.

Stockpile FCA 1 – the largest stockpile in the far north of the FCA. Material comprised a brown/orange, firm to stiff, very sandy, gravelly clay;

Stockpile FCA 2 – Soft to firm brown sandy and gravelly clay.

Stockpile FCA 3 – Firm brown slightly sandy, gravelly clay with occasional with some concrete and brick gravel/cobbles.

Stockpile FCA 4 – Tree roots/stumps and organic material. To be disposed off site.

Stockpile 5 – Screened/riddled deleterious material (metal, concrete, textiles, plastic) to be disposed off site.

CGL had been instructed by FMC to sample stockpiles FCA SP1, FCA SP2 and FCA SP3 and test for reuse as topsoil.

Scour Protection/Detention Basin

ALC (CGL) conducted a site walkover of the scour protection around Yeading Brook wingwalls and Detention

Basin to:-

- i) Confirm the levels of the basin and toe level of the embankment and wing walls tied in with the levels as shown on the design drawings;
- ii) identify if there is a requirement to install scour protection to the south wester wing wall (adjacent to the Detention Basin).
- iii) visually inspected the grading rock fill which had been imported for the scour protection to assess the grading. The stone appeared to be graded towards the lower bound specified particle size of Dn50 150mm and the material may therefore not be graded as specified. It is understood FMC are having difficulties sourcing material for the grading specified by CGL.

Post site visit note:

- i) CGL have confirmed the levels of the detention basin and embankment and wingwall of the southern side of the Central Embankment (Zone 4) as constructed, are in accordance with the design levels;
- ii) CGL have confirmed that scour protection is not required at west YB southern wingwall as the presence of the detention basin at this location should prevent scour occurring at the end of this wing wall;
- iii) CGL have revised the scour protection specification and drawing to enable FMC to source and place more suitable rockfill.

Sampling and/or testing undertaken or observed

The following samples were taken from the FCA stockpiles for chemical and ACM screening for reuse as topsoil/landscape fill:-

FCA SP1 (approx. 1500m3) - 4 soil samples.

FCA SP2 (approx. 500m3) - 1 soil sample.

FCA SP3 (<500m3) - 1 soil sample

The following samples were taken from EYB north slope for ACM screening/quantification:-

EYB N (S12 and S13) – 2 soil samples for ACM testing

Other comments and observations (ecological concerns? Water observations? Anticipated issues?)

None

Correspondence requested by FMC/CGL

CGL provided i2 Analytical with a testing schedule for the sampling. Testing to be undertaken un FMC purchase order.

Correspondence received from FMC

None

Summary photos



Decommissioning of Bh3 adjacent to Yeading Brook



BH3 decommissioned and grouted



Overview of EGUC north landscape fill.



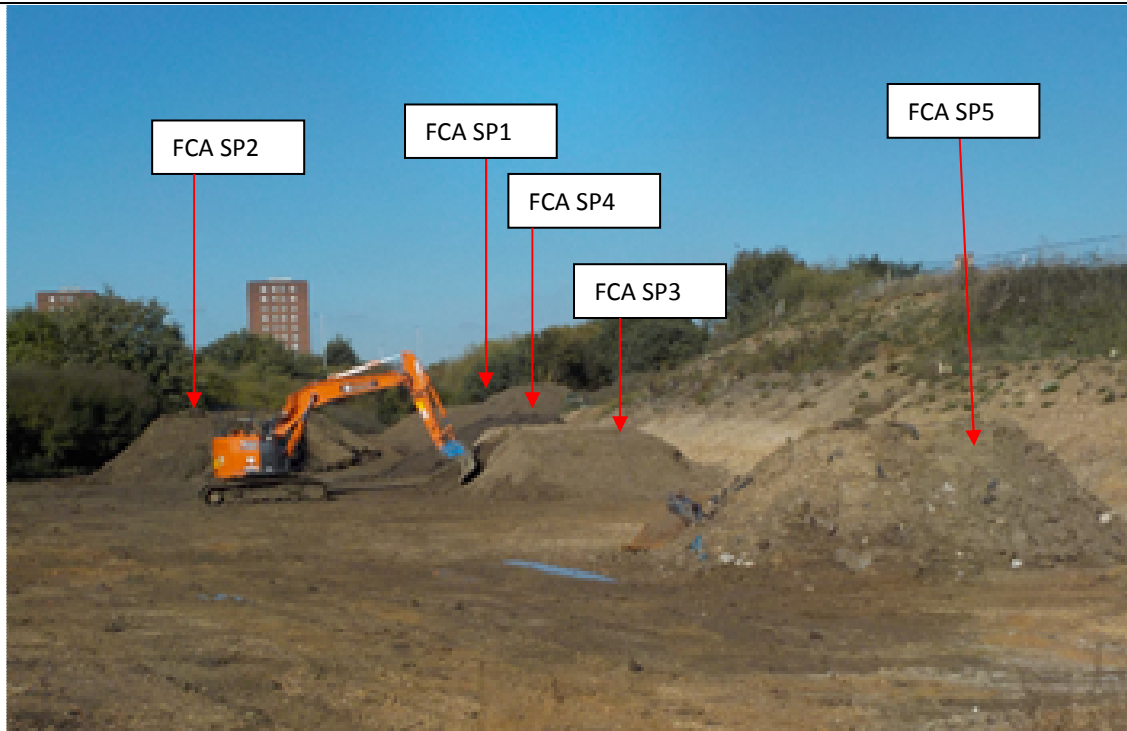
Top of Detention Basin along toe of Western embankment south.



Scour protection material.



FCA Stockpile 1



Overview of FCA stockpiles. View looking north.



FCA Stockpile 2



FCA Stockpile 3. View looking south.

Site Observation Report Form



SITE:	Southall Western Access	JOB NO:	CG/28308
Date and time:	05/11/2018 09:30 to 12:30	VISIT BY:	ALC
WEATHER:			
Time	Description		
09:00 to 15:30	Cool, drizzly		
SVR 116			

Site operations

- | | |
|---------------------|---|
| Work in hand | <ul style="list-style-type: none"> Site walkover and inspection of scour protection rockfill and construction. |
|---------------------|---|

Observations

Scour Protection

The newly imported larger stone for the scour protection appears to be between 300mm and 600mm in size (Photo 1). FMC breaking the larger pieces so that the average size is around 200mm to 300mm and constructing the scour protection to East Yeading Brook north wing wall.

Anne (CGL)/Trevor (FMC) agreed in principal (subject to CGL formal approval) the following refined scour protection design details:-

- overlap Terram at top of stone on slope prior to placing topsoil on the upper half of the slope. Terram to be cut once topsoil is placed. This will prevent migration of fines into the rockfill;
- anchor the Terram in a trench around the scour protection at ground level. Trench to be backfilled with arisings;
- rockfill to be placed such that the smaller stone at the toe of the slope is buttressed by the larger stone at the base. Pack gaps in between larger stone with smaller stone;
- Smaller rockfill already placed on East YB southern embankment to remain but replaced with larger stone size 3.0m from toe of slope (Photo 2).

ALC noted the following concerns with regard to the stability of the embankment are:-

- Standing water within the scour protection excavation, and ponding at the toe of slope. There is no embankment toe drainage in this area;
- Along the full length of the EYB north embankment FMC have levelled the ground, effectively undercutting the toe with a 0.5m high vertical cut (Photo 3). This has been done so plant can access the scour protection area. The fill needs to be reinstated as soon as possible, particularly as heavy and persistent rainfall could exacerbate the potential risk of instability. The plant can't currently access the scour protection working area as the ground is too soft, so the slope is unlikely to be reinstated this week.

East GUC south extension of landscape fill

FMC are proposing to extend the landscape fill in front of the East GUC wing wall to 3.0m offset from the toe of the railway embankment (Photo 4). There are at least two drainage pipes visible in the railway embankment but it is not known if these are redundant; no toe drainage to the railway embankment was visible. The fill extension will also limit access to the bridge for maintenance.